

Fire Weather Annual Report

Southeast Idaho

2010

Pocatello Fire Weather Office
Pocatello, Idaho



DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service



2010 Fire Weather Annual Report

National Weather Service – Pocatello Fire Weather Office



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1. Introduction:

The National Weather Service, Weather Forecast Office at Pocatello, Idaho has Fire Weather Forecast responsibility for portions of Idaho serviced by the Central, Eastern and Southern Interagency Dispatch Centers (Figure 1). The Pocatello Fire Weather Office produces this Annual Fire Weather Report. Previous reports are maintained up to five years.

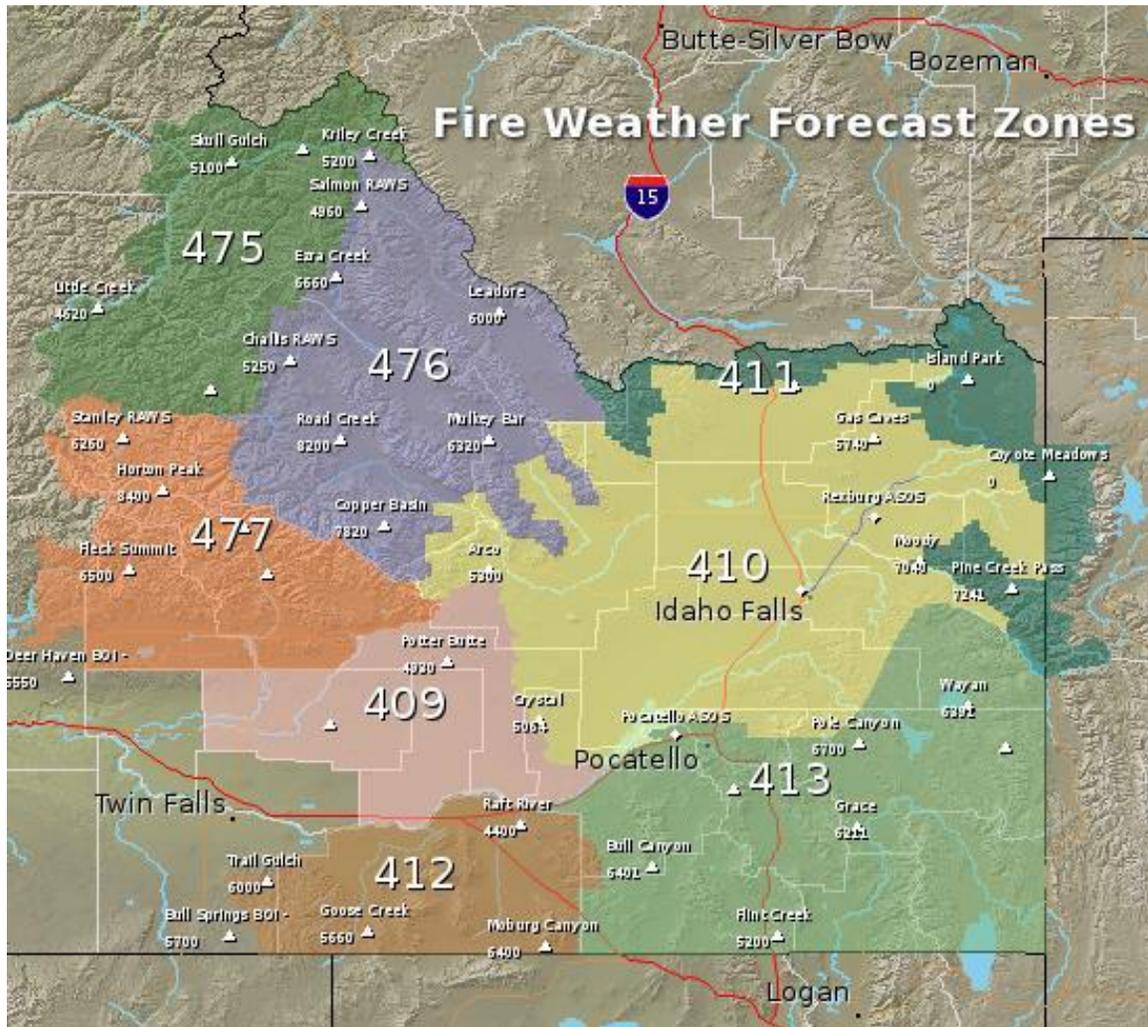


Figure 1 WFO Pocatello Fire Weather area of responsibility (solid color areas).

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2. Overview of the fire season:

The El Niño/Southern Oscillation Index (ENSO) indicated that water temperatures in the central and eastern equatorial Pacific showed a warming trend beginning around June of 2009. This trend continued into the winter months becoming a strong El Nino event by December of 2009 that would continue well into the spring of 2010. From November 2009 through March 2010 strong westerly winds in the upper levels of the atmosphere (jet stream) were frequently located in the Eastern Pacific near 40N 150W. A low pressure circulation was often positioned a little south of the Aleutian Islands resulting in a splitting of the flow pattern closer to the coast line. Storm systems frequently either tracked northeastward through the Oregon coast and Idaho Panhandle area or progressed through central and southern California and Arizona. Many of these storm systems failed to bring significant precipitation to southeast Idaho. It wasn't until April of 2010 that the low pressure circulation south of the Aleutians shifted closer to the Pacific Northwest coast and a storm track more favorable for substantial precipitation in Idaho developed.

The El Nino/Southern Oscillation (ENSO) cycle occurs over a two to seven year period and refers to conditions of sea surface temperatures in the tropical Pacific Ocean. Researchers have identified other cyclic patterns besides ENSO around the globe that may affect long term weather patterns. Some of these cyclic patterns may span 10 or even 30 years. La Nina (colder than normal) and El Nino (warmer than normal) are terms associated with extremes in the ENSO cycle. The ENSO cycle has a strong influence on global climate patterns and is a major player in long term climate outlooks.

Basin averaged precipitation as reported by the SNOTEL observation network (Figure 2.1a) got off to a good start in October 2009. The effects of the strengthening El Nino became apparent as one storm system after another either tracked northeast through Washington or well south of Idaho. Precipitation averaged a mere 60 to 75 percent of normal from November 2009 through March 2010, a time when southeast Idaho receives most of the winter rain fall and snow pack. Mountain snow packs as determined from the water equivalent of the snow (Figure 2.1b), ranged from 50 to 65 percent of average most of the winter. On again, off again warm temperatures also took their toll on the snow pack. As reported in the Natural Resources Conservation Service Basin Outlook Report for March, snow pack in the Upper Snake Basin and headwaters areas were pushing record dry conditions at several sites where records have been kept for 50 to 90 years (Figure 2.2a). It is pretty rare to recover from a dry winter this late in the season.

By the last couple days of March the situation began to change with the low pressure trough south of the Aleutians shifting towards the Washington coast. Near normal rain and snow amounts fell across southeast Idaho for the next two months with the southern Sawtooth Forest faring well above normal (Figure 2.2b). Persistent moist westerly flow off the Pacific provided abundant cloud cover, limited northward movement of warm air and in general kept temperatures 3 to 5 degrees below normal well into July (Figure 2.2c). Snow pack that developed late in the season was able to melt slowly in the higher elevations and prolong stream flows. Prolonged melting of snow pack at elevations above

8000 feet was still evident in the Salmon Basin the first week of July. In short, fuels in the higher elevations took longer to dry and cure.

Water temperatures in the central and eastern Pacific gradually returned to normal in June and the El Niño event gave way to an ENSO-neutral state. High pressure would develop over the southwestern states for periods of time in the latter half of July and August. The southwest area monsoon brought four or five northward surges of moisture and thunderstorms into the Great Basin, but this was cut short a couple of weeks early by westerlies off the Pacific and the monsoon period was pretty much over by the end of August.

Two events helped bring the fire season to an end this year. The first week of October a strong low pressure system developed near San Diego and tracked northeast through the Great Basin. Widespread rain developed across southeastern Idaho with many mountain areas receiving over one inch of precipitation. Snow accumulation was short lived with warm ground temperatures and snow levels around 8000 feet of elevation. October 24th through the 26th a very moist storm system approached from the Pacific Northwest. Up to two inches of precipitation was reported at some RAWS and SNOTEL sites. A significant spike can be seen for precipitation in October (Figure 2.3). Total precipitation for the water year however, fell well below the mean (Figure 2.4).

Persistent cloud cover, rain and cool temperatures through the end of June resulted in an extremely low Keetch-Byram Drought Index; a measure of short term drought; i.e., evapotranspiration and near surface soil moisture content (Figure 2.5a). The Index increased slowly to a moderate value near 400 by late September, but mainly in the lower elevations of the Snake Plain and South Central Highlands (Figure 2.5b). The very limited snow pack over the winter resulted in the abnormally dry conditions near Bear Lake reported by the National Drought Mitigation Center (Figure 2.6).

The Palmer Drought Severity Index measures more long term meteorological conditions over several months. Near the peak of cloud cover, rain, and seasonably cool temperatures, the Palmer value is much more in the “mid-range” (Figure 2.7), and probably reflects the very low precipitation over the course of the winter months.

Thunderstorm activity was moderate this year and judged to be significant (greater than 15% of aerial coverage) on 11 different days this fire season between late July and late August (Figure 2.8). The elimination of the wet versus dry (> .10 inch rainfall) thunderstorm requirement from the Red Flag criteria beginning in 2008 resulted in more days with warnings in effect. This fire season wetting rains were observed on six of the eleven thunderstorm days. Cooler and wetter than normal weather conditions resulted in a much later start to the fire season. For Red Flag purposes, the fuels in Idaho Fire Weather Zones 409 and 412 were not designated as critical until July 20th and Zone 19 not until August 31. Fuels in the Salmon-Challis Forest were not designated as critical the entire fire season.

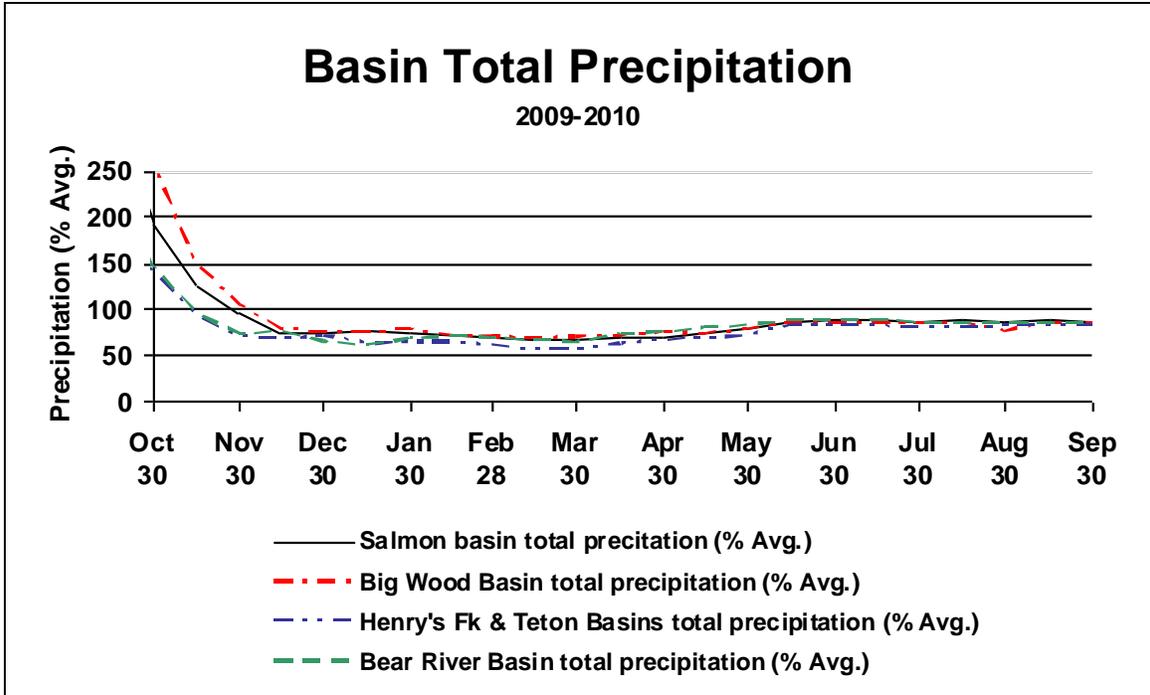


Figure 2.1(a) Total precipitation for select Southeast Idaho Basins expressed as a percent of average. From USDA Natural Resources Conservation Service, National Water and Climate Center, Portland Oregon.

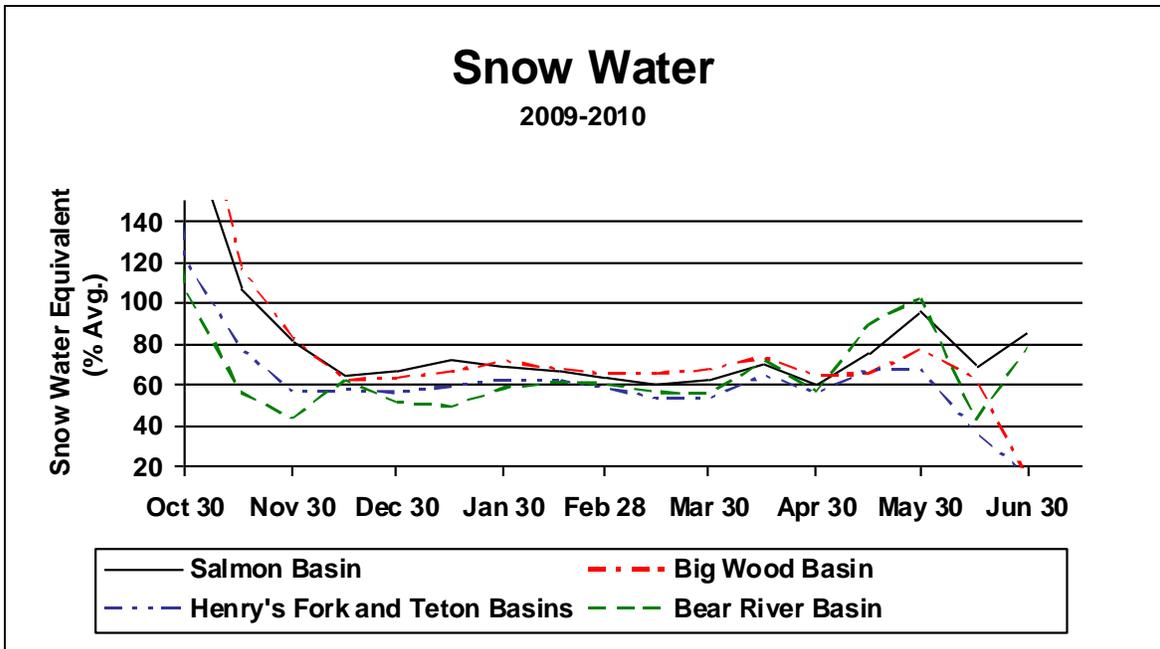


Figure 2.1(b) Snow water equivalent for select Southeast Idaho basins. From USDA Natural Resources Conservation Service, National Water and Climate Center, Portland Oregon.

Percent Of Normal Precipitation

DEC 2009 - FEB 2010

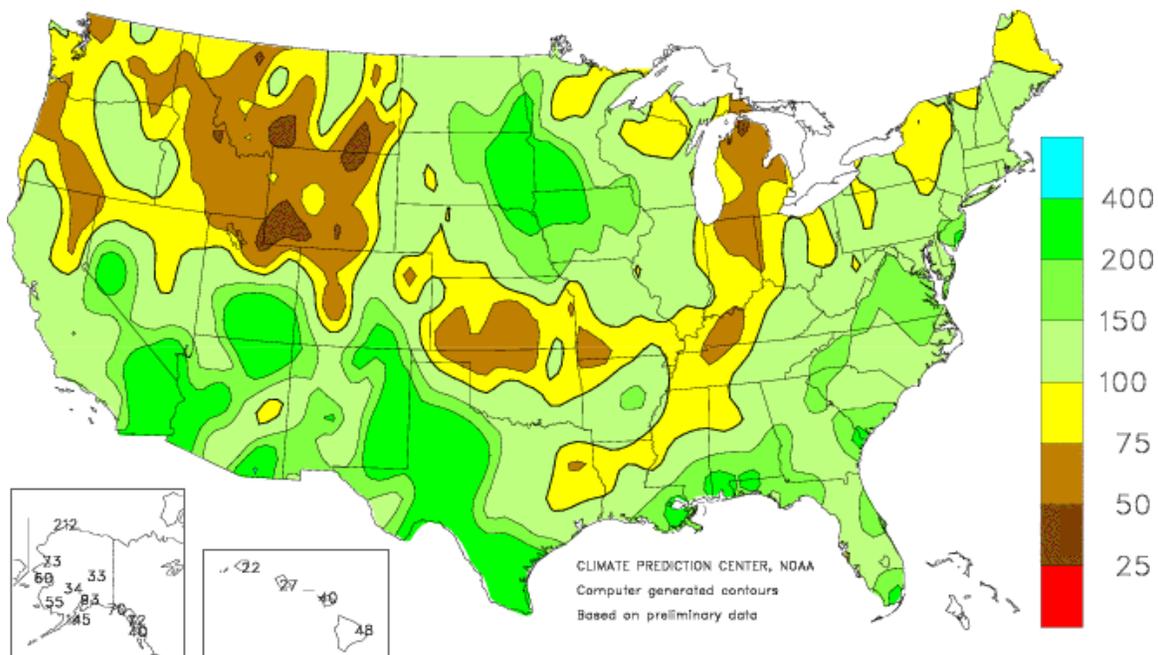


Figure 2.2a Precipitation as a percentage of normal for a 90 day period centered on January 2010, from Climate Prediction Center, National Oceanic and Atmospheric Administration.

Percent Of Normal Precipitation

MAR - MAY 2010

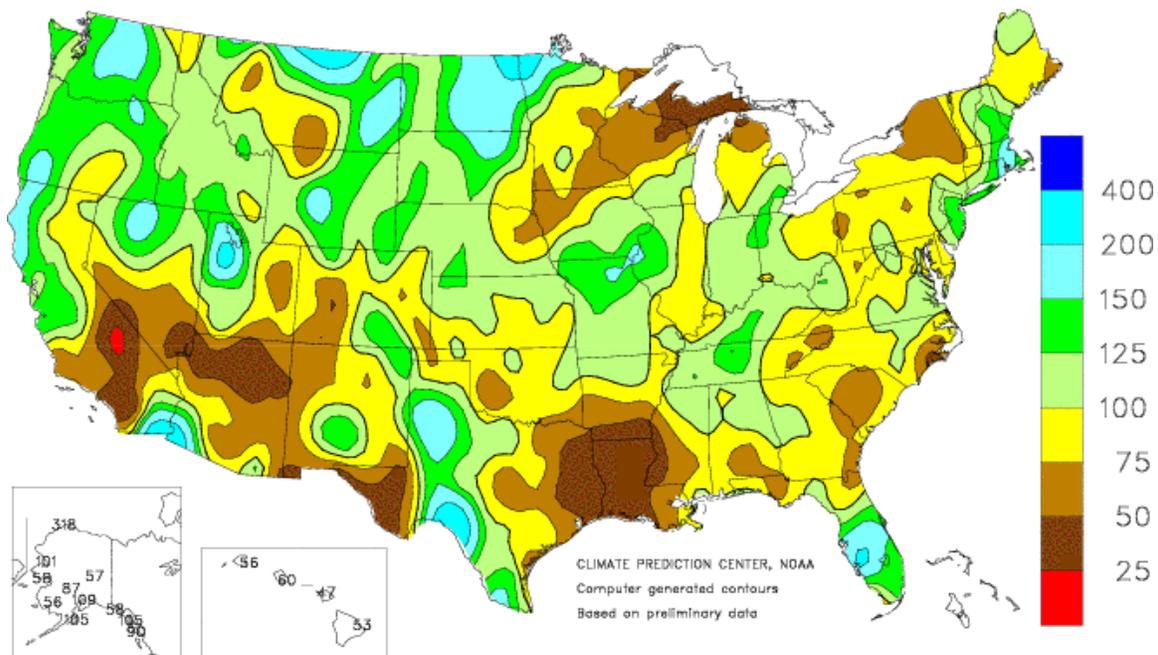


Figure 2.2b Precipitation as a percentage of normal for a 90 day period centered on April 2010, from Climate Prediction Center, National Oceanic and Atmospheric Administration.

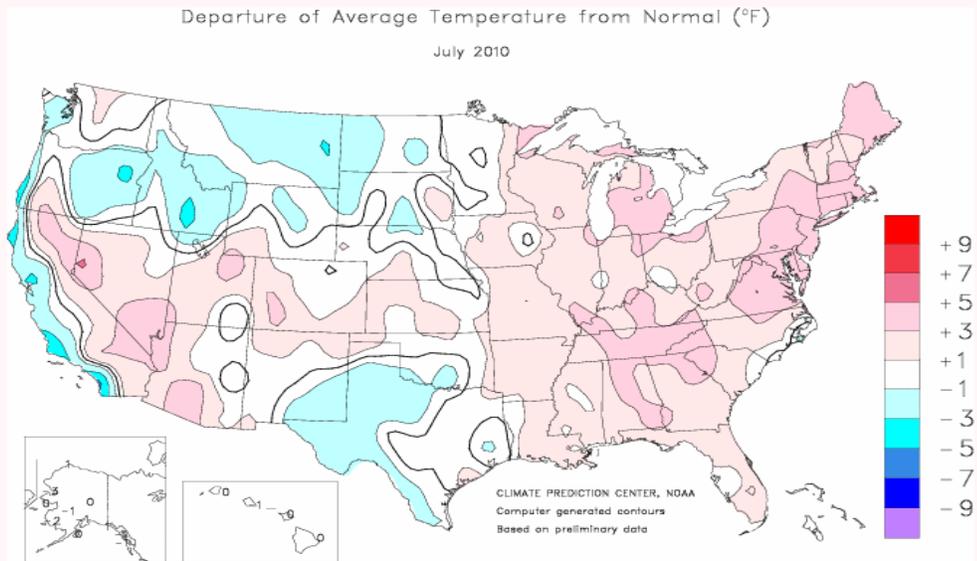


Figure 2.2c Temperature departure from normal for a 90 day period centered on July 2010, from Climate Prediction Center, National Oceanic and Atmospheric Administration.

Precipitation Departures From Normal Pocatello, Idaho

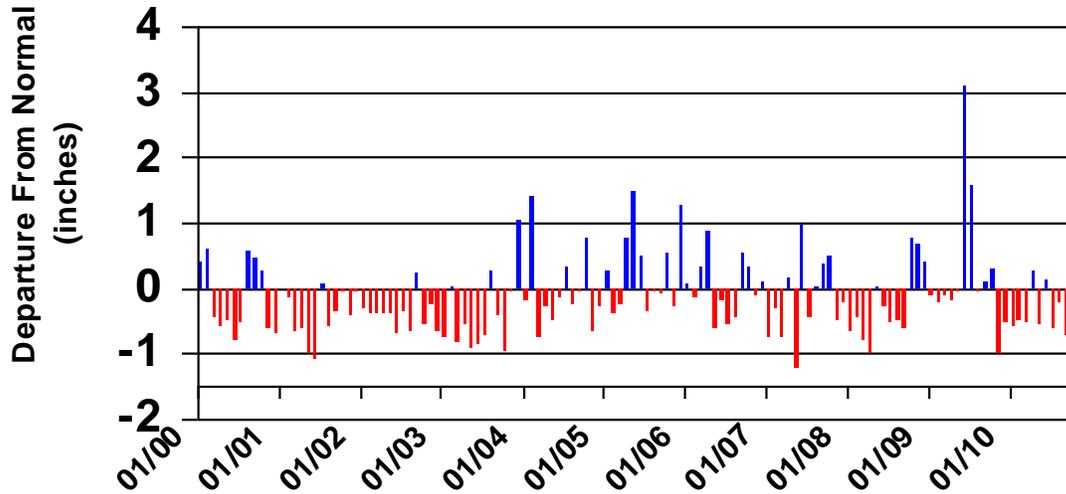


Figure 2.3 Precipitation departures from normal at Pocatello, Idaho based on thirty-year normals of data from 1971 to 2000 archived at the National Climatic Data Center.

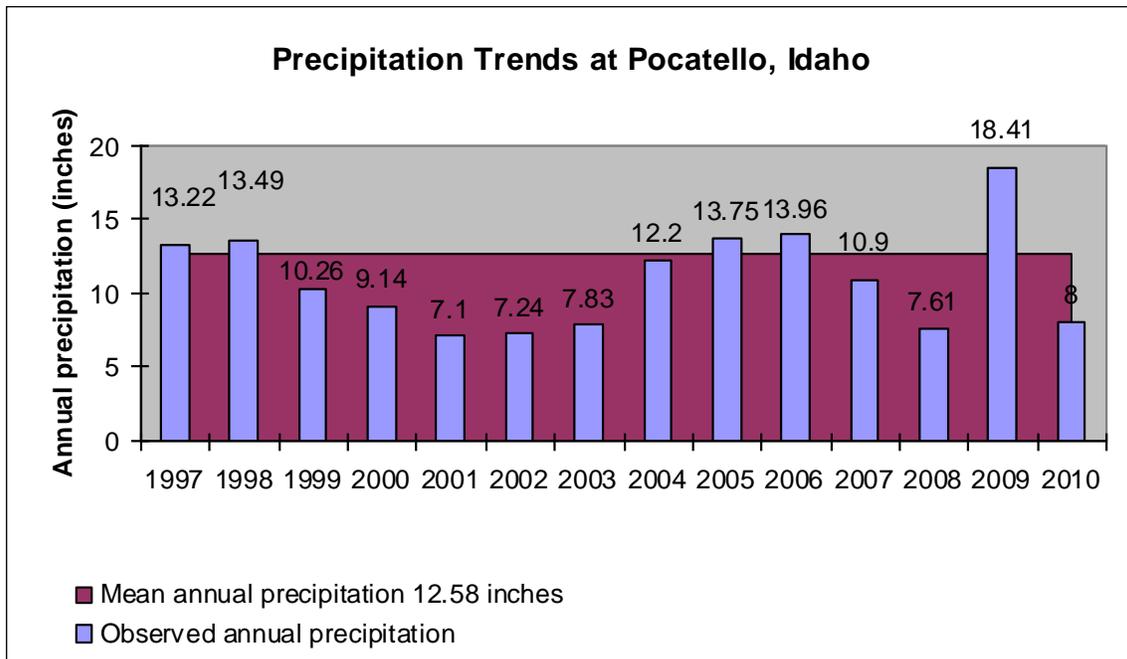


Figure 2.4 Water year (Oct. 1 to Sep. 30) observed precipitation at Pocatello, Idaho.

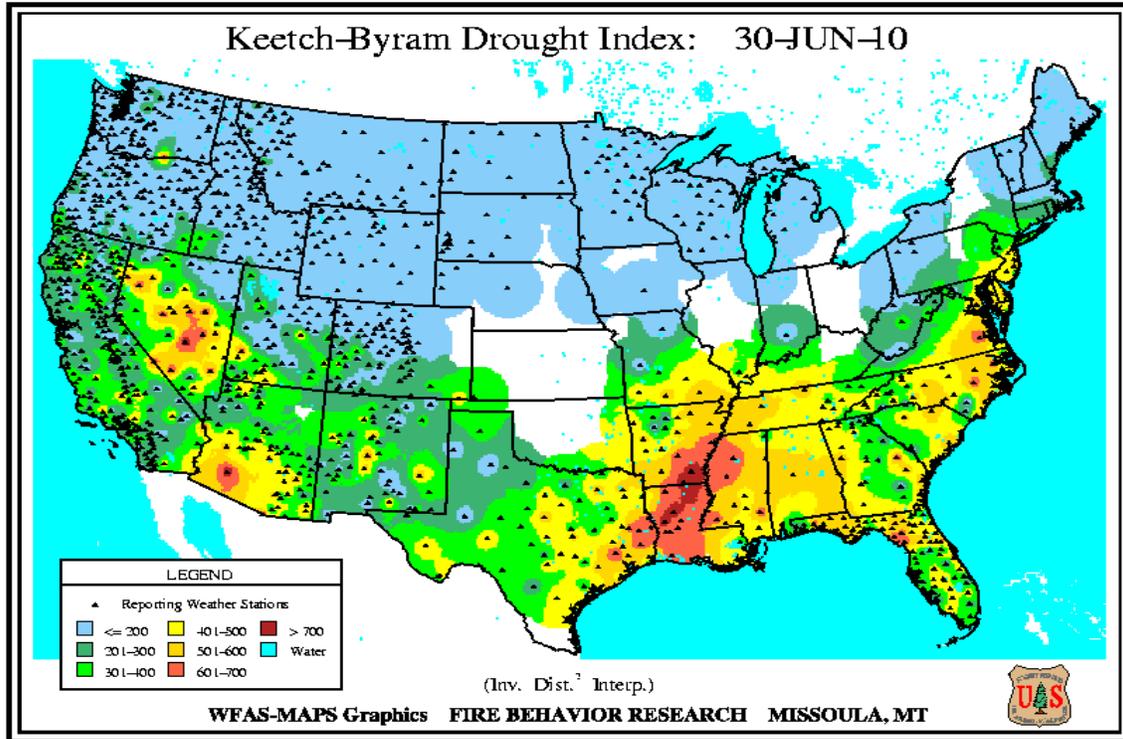


Figure 2.5(a) Keetch-Byram Drought Index reflecting more short term drought conditions, i.e. evapotranspiration and near surface soil moisture. Valid June 30, 2010.

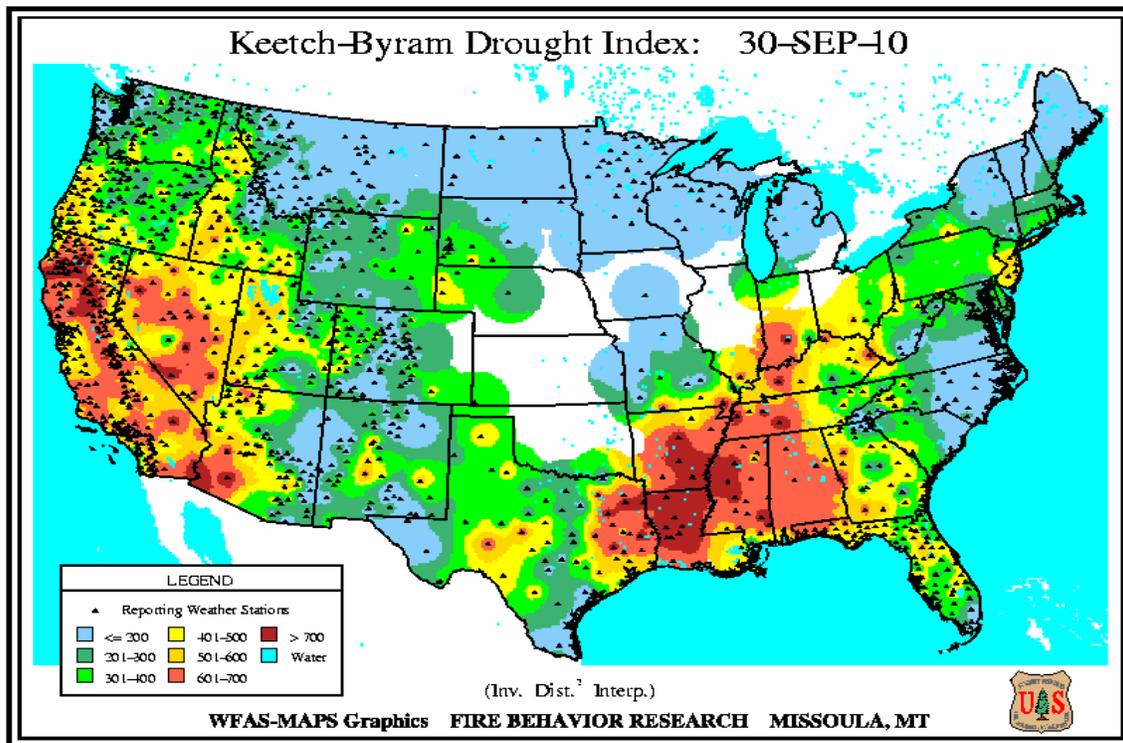
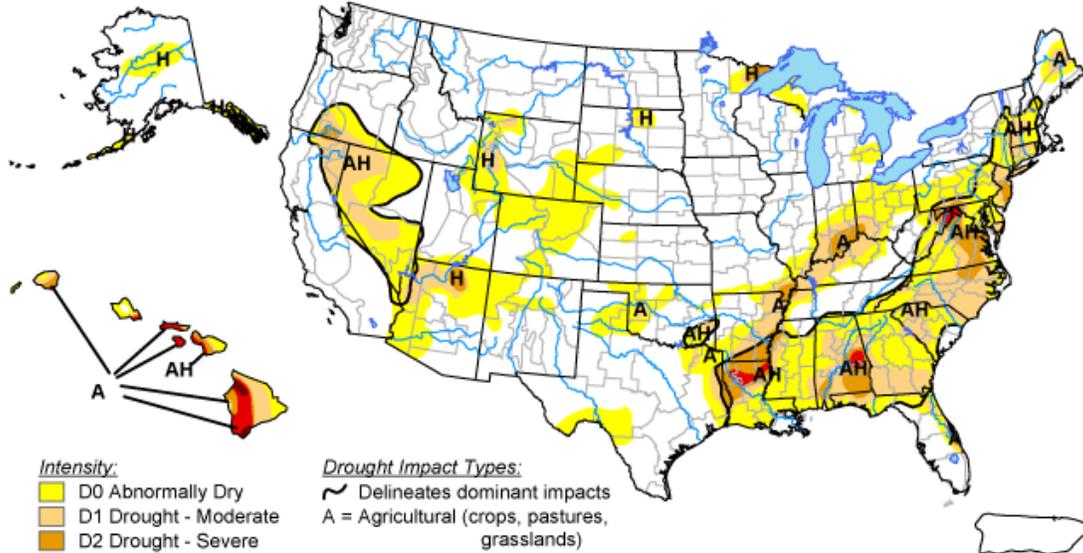


Figure 2.5(b) Keetch-Byram Drought Index reflecting more short term drought conditions, i.e. evapotranspiration and near surface soil moisture. Valid September 30, 2010.

U.S. Drought Monitor

September 21, 2010
Valid 8 a.m. EDT



- Intensity:**
- D0 Abnormally Dry
 - D1 Drought - Moderate
 - D2 Drought - Severe
 - D3 Drought - Extreme
 - D4 Drought - Exceptional

- Drought Impact Types:**
- Delineates dominant impacts
 - A = Agricultural (crops, pastures, grasslands)
 - H = Hydrological (water)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://drought.unl.edu/dm>



Released Thursday, September 23, 2010

Author: Richard Heim/Liz Love-Brotak, NOAA/NESDIS/NCDC

Figure 2.6 Drought summary map is based on a multi-index drought classification scheme and produced jointly by the National Drought Mitigation Center (University of Nebraska-Lincoln) and several federal partners including Joint Agricultural Weather Facility (U.S. Department of Agriculture and Department of Commerce/National Oceanic and Atmospheric Administration), Climate Prediction Center (U.S. Department of Commerce/NOAA/National Weather Service), and National Climatic Data Center (DOC/NOAA).

**Palmer Drought Severity Index
June, 2010**

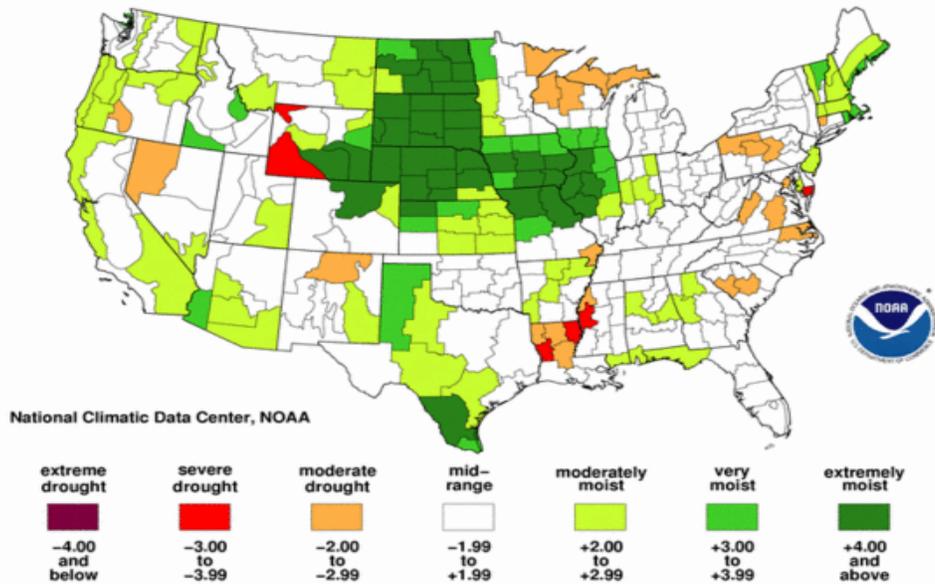


Figure 2.7 Palmer Drought Severity Index (June 2010) measuring long term meteorological conditions over many months.

**Lightning Days
($\geq 15\%$ aerial coverage)**

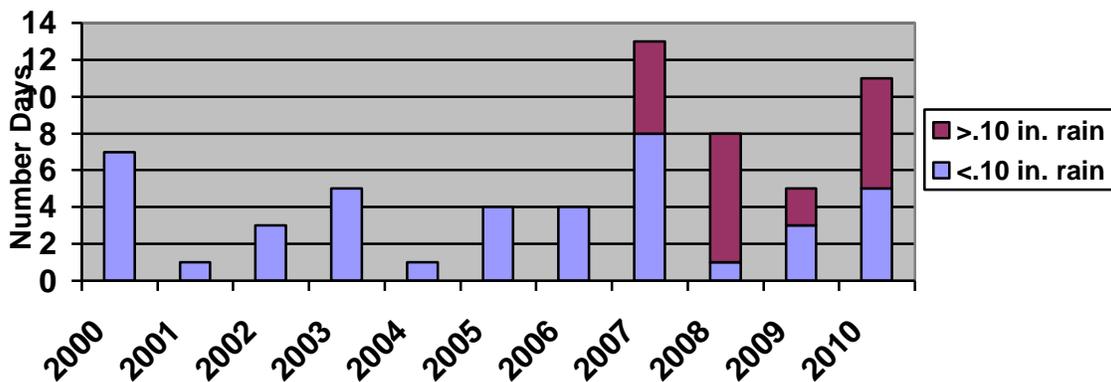


Figure 2.8 Number of days when thunderstorm and lightning activity in Southeast Idaho was judged to be significant as part of the Red Flag Event verification process. Prior to 2007 only days where thunderstorms were characterized as “dry” (<.10 inch rain) are indicated.

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3. Weather in review: October 2009 – September 2010

October to mid-November 2009: After a late start to the fire season, followed by a dry September with several Red Flag Warnings, this period was cold with a surplus of precipitation, mainly in the southern and western locations. Snow fell on October 5th in the Snake River Plain, sealing the end to the quietest fire season in quite a while. Most of the storms moved in from Canada, providing the abnormally cold air. Moderate to strong storms occurred on the 4th- 5th, 13th-14th, and the 19th of October. An active weather pattern continued until November 22nd. Temperatures moderated somewhat during November as cold frontal systems came from a more westerly direction, with mild air pushing into the Gem State from the south before the precipitation and cold air would arrive.

Late November to mid-December 2009. The abrupt change from cold and wet to cold and dry weather developed by late November. At first, this was due to dry high pressure setting up to the north, providing northerly surface flow into the Fire Weather District. By December, the storm track was across the central Pacific, with storms entering the west coast in California, then tracking through the southern Great Basin. A few storms moved far enough north to bring snow to the southern highlands and the Snake River Plain in early December (5th -- 8th), but most of the first half of December was notable for the outbreak of Arctic air until the 11th.

Mid-December 2009 to February 2010. Temperatures finally moderated somewhat, being much closer to normal for the period, though still generally below normal. Moderate to strong storms returned to central and southern Idaho by the 16th of December, with strong winter storms on the opening day of the new year, then again on the 12th-13th and 21st-22nd of January. Most of the storms during this time were light in terms of precipitation. From the 21st of January to the end of the month a number of small storms passed through the region. Southern Idaho received generally only 50 percent of normal precipitation, while isolated locations in central Idaho and places near the Continental Divide saw closer to normal precipitation. Except for a good winter storm on February 11th to the 13th, precipitation decreased well below normal everywhere in central and southern Idaho for the month of February. Snow pack measurements taken at the first of the year indicated poor precipitation accumulation, with most of central and eastern Idaho at 50 to 70 percent of normal. Central Idaho received light snow during January, but overall conditions remained quite dry through February. Many eastern Idaho precipitation measurements were the lowest ever recorded for the November—February timeframe.

March and April 2010. Colder than normal temperatures continued, which helped to preserve the snowpack, as below to near normal precipitation continued in the southern highlands and near normal precipitation in the upper snake highlands. More significant winter storm systems began to reach Idaho by the end of March and activity increased through much of April. These storm systems favored the northern areas in the District. The strongest Pacific storm systems occurred on March 29th-31st, April 21st – 23rd and 27th-28th. With the exception of the Targhee National Forest area, there was a slight

recovery from near record low snow pack by the end of March, but most areas remained at 50 to 70 percent of normal. Abundant precipitation and below normal temperatures helped lift the percentages to 70 to 80 percent by the end of April.

May 2010. Climatically the wettest month in central and eastern Idaho, May lived up to its reputation in the central part of the state, but this month was remarkably cold. Measurable snow fell in Pocatello on the 6th, and a trace of snow was recorded for the first time ever on the 22nd. It was the coldest May at the Pocatello airport since it opened in 1939. This unusual cold spell preserved the snowpack and stretched the limited water supply that was expected.

June 2010. While not the heavy rains of 2009, the storm track during the first half of the month stayed directly over southern Idaho. This kept light to moderate storms moving through at regular intervals. The mountains received the brunt of these storms with central Idaho running double the average rainfall for the month. Precipitation was much closer to normal for the Snake River Plain and areas south of the Snake River. Temperatures continued to be quite a bit below normal, though not setting records this month. The storm track finally shifted northward and away from the Fire Weather District towards the end of the month.

July 2010. The drier end of June turned into a near drought for July, until a cold low moved through central Idaho on the 26th—28th, and then spent the next couple of days over eastern Idaho. Drier than normal conditions helped boost temperatures, but they generally still ran below normal. This is likely due to dry cold fronts passing through on the 4th—5th, the 12th—13th, and the 19th, returning cool air to the Fire Weather District. Pocatello reached 101 degrees on July 16th, the warmest day of 2010 for the Pocatello Regional Airport. Idaho Falls also reached its warmest temperature the same day – 97 degrees.

August 2010. Early August kept showery weather going in central and southern Idaho. Surpluses were again seen in central Idaho, and significant cold fronts passed through on the 5th—7th, and again on the 9th—10th. Temperatures were generally near normal for the first time since March 2010. Pocatello again reached triple digit temperatures with 100 degrees on the 26th, and Idaho Falls pushed to 97 degrees again. At the end of the month, dry cold fronts on the 27th and 29th advanced through southern Idaho, generating Red Flag conditions.

September 2010. As the La Niña conditions in the Pacific strengthened, monthly precipitation dropped well below normal, with only one significant wet storm during the month, on the 8th—9th. Dry cold fronts were the rule, with a number of them: the 1st, 4th—5th, 19th—20th, and 22nd—23rd. Even fuels for portions of central Idaho had cured by this time, producing quite a few Red Flag events.

October 2010. Two significant cold storms brought precipitation to nearly all of Idaho, the first one on the 4th—8th, and then a storm with very heavy rain on the 24th that virtually ended the fire season in Idaho.

4. Precipitation and Dry 1000 hour fuels by zone:

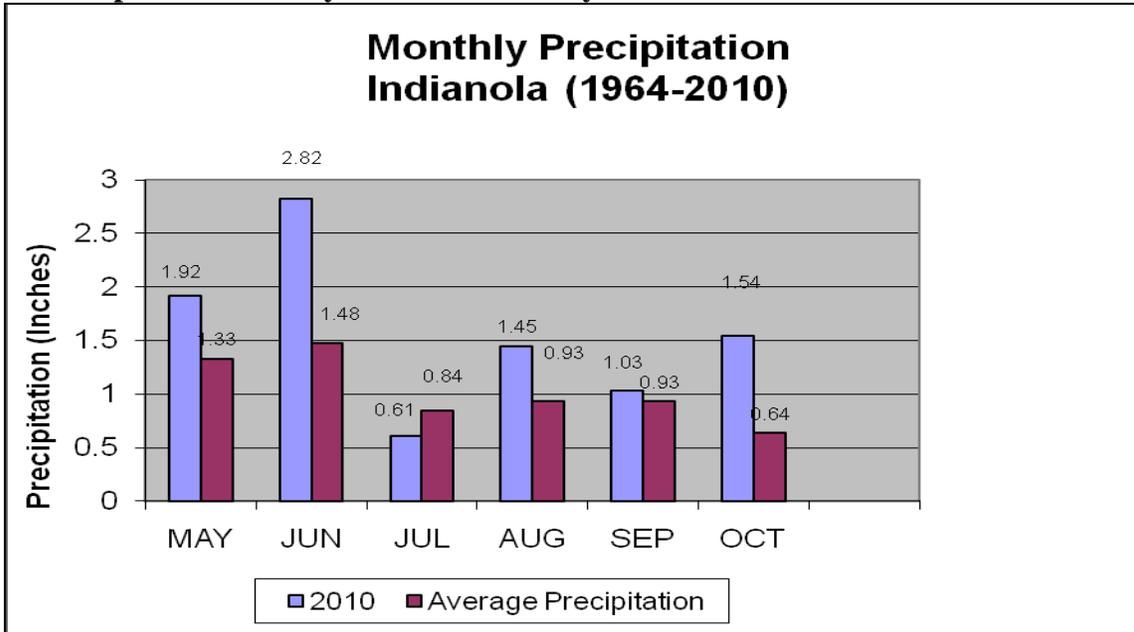


Figure 4.1(a) Observed and average precipitation at Indianola RAWS site, Fire Weather Zone 475.

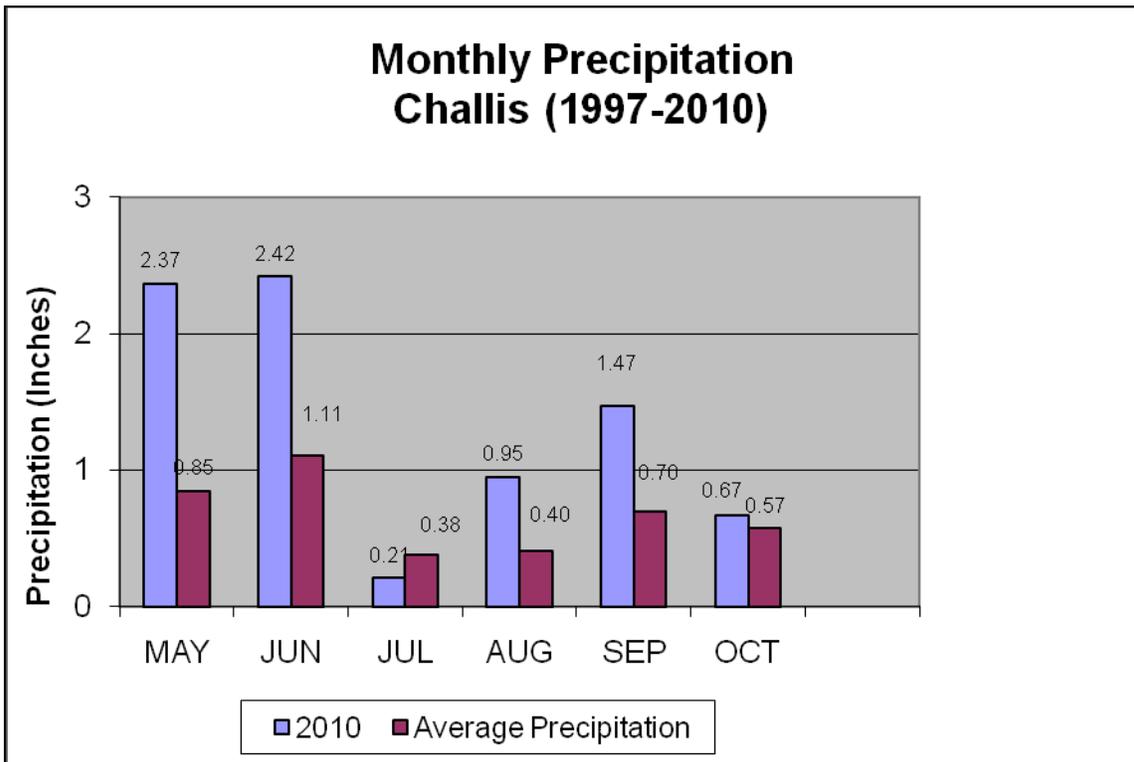


Figure 4.1(b) Observed and average precipitation at Challis RAWS site, Fire Weather Zone 476.

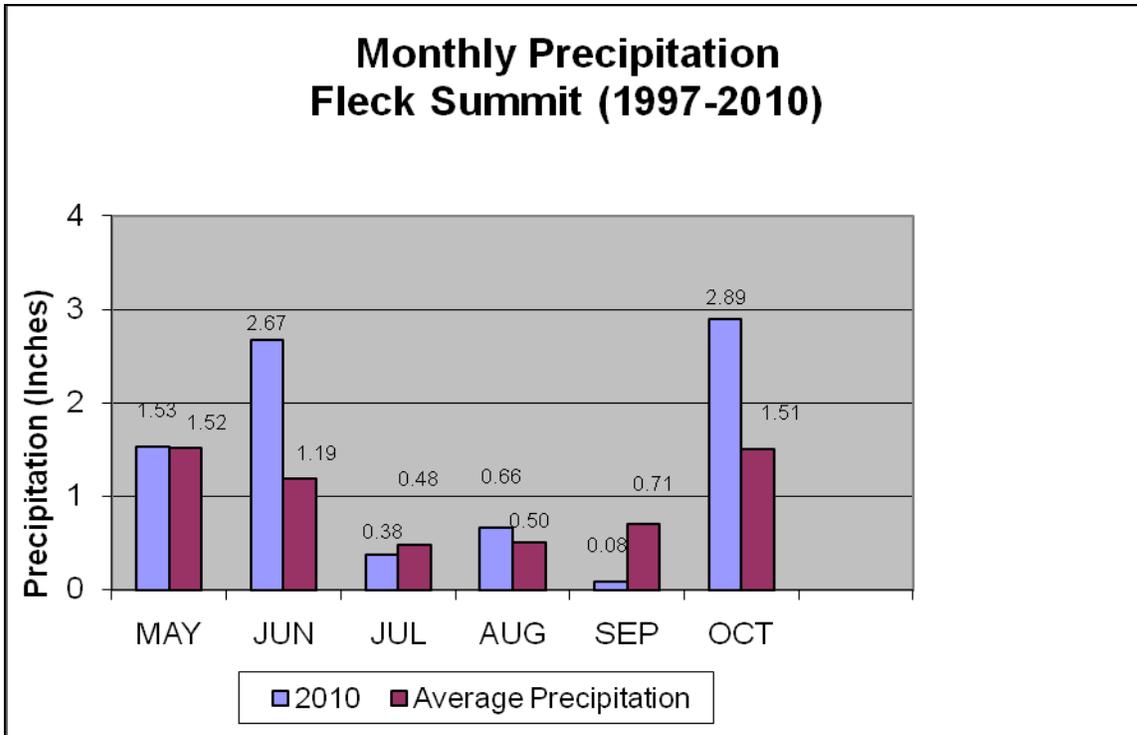


Figure 4.1(c) Observed and average precipitation at Fleck Summit RAWS site, Fire Weather Zone 477.

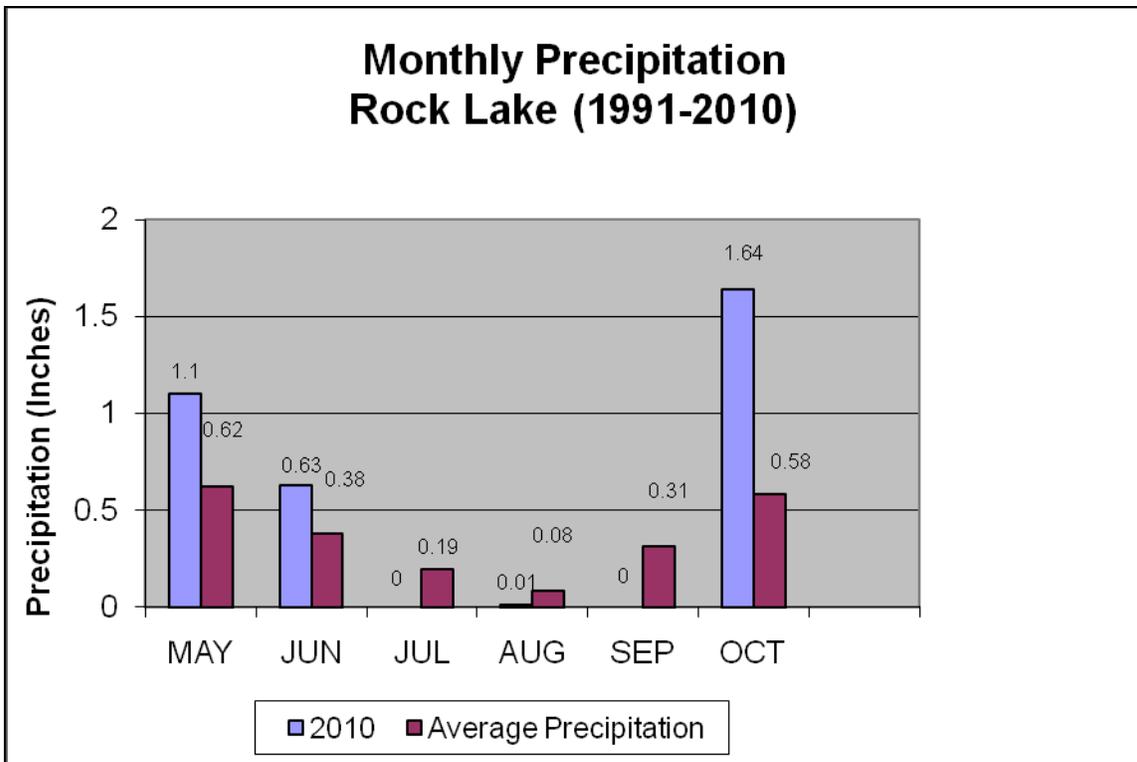


Figure 4.1(d) Observed and average precipitation at Rock Lake RAWS site, Fire Weather Zone 409.

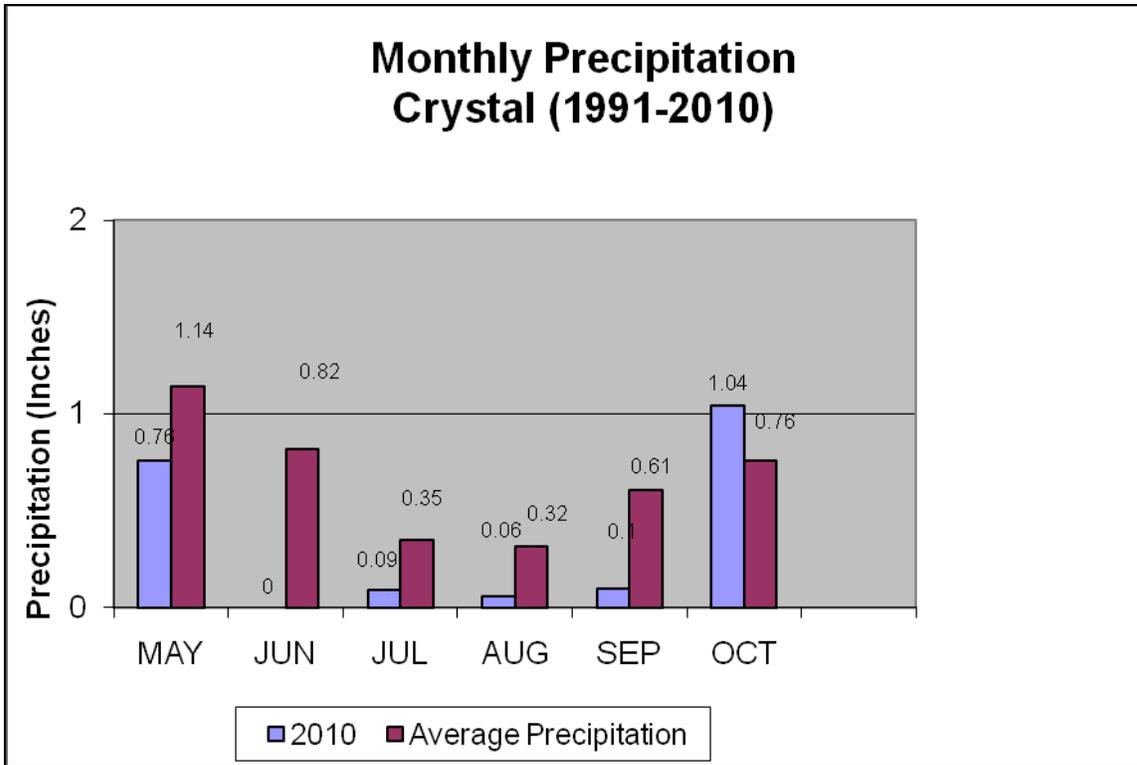


Figure 4.1(e) Observed and average precipitation at Crystal RAWS site, Fire Weather Zone 410.

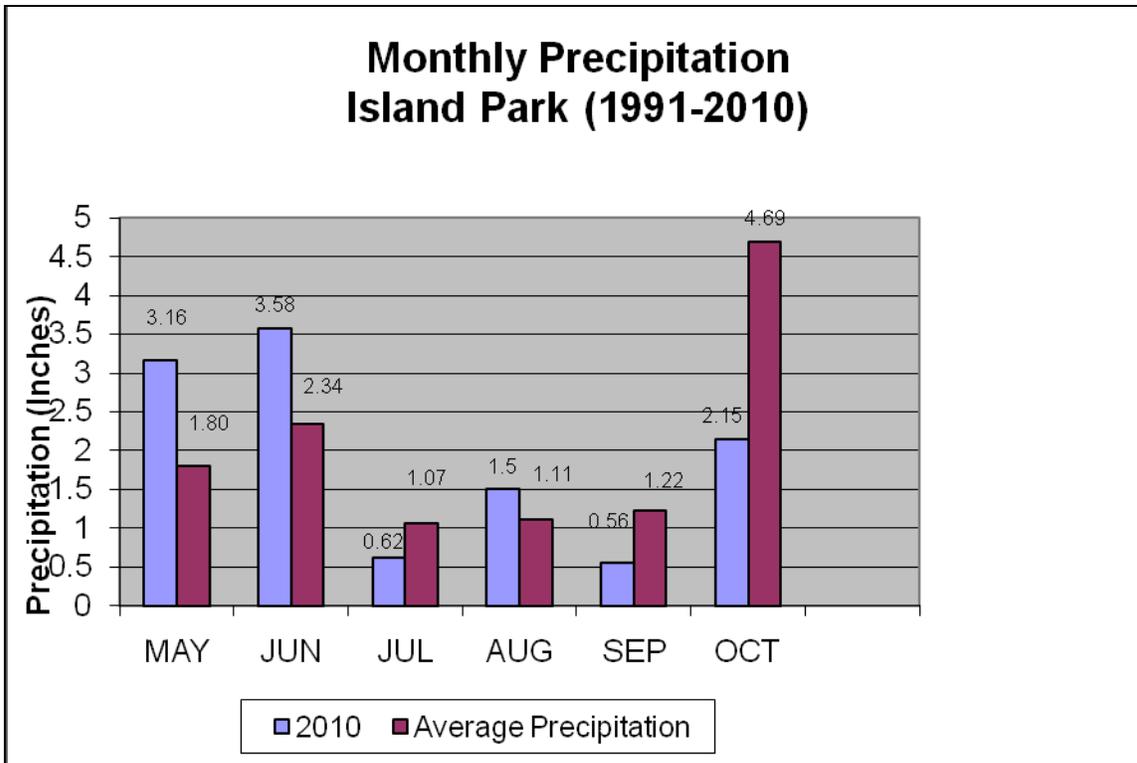


Figure 4.1(f) Observed and average precipitation at Island Park RAWS site, Fire Weather Zone 411.

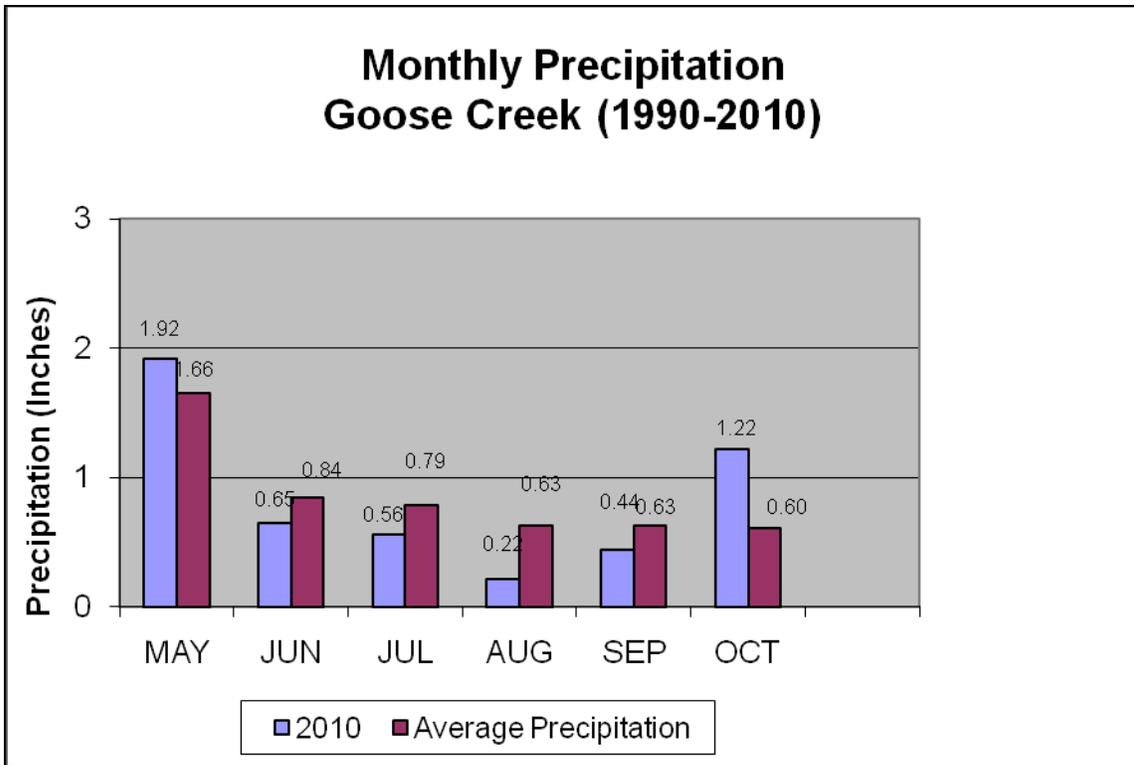


Figure 4.1(g) Observed and average precipitation at Goose Creek RAWS site, Fire Weather Zone 412.

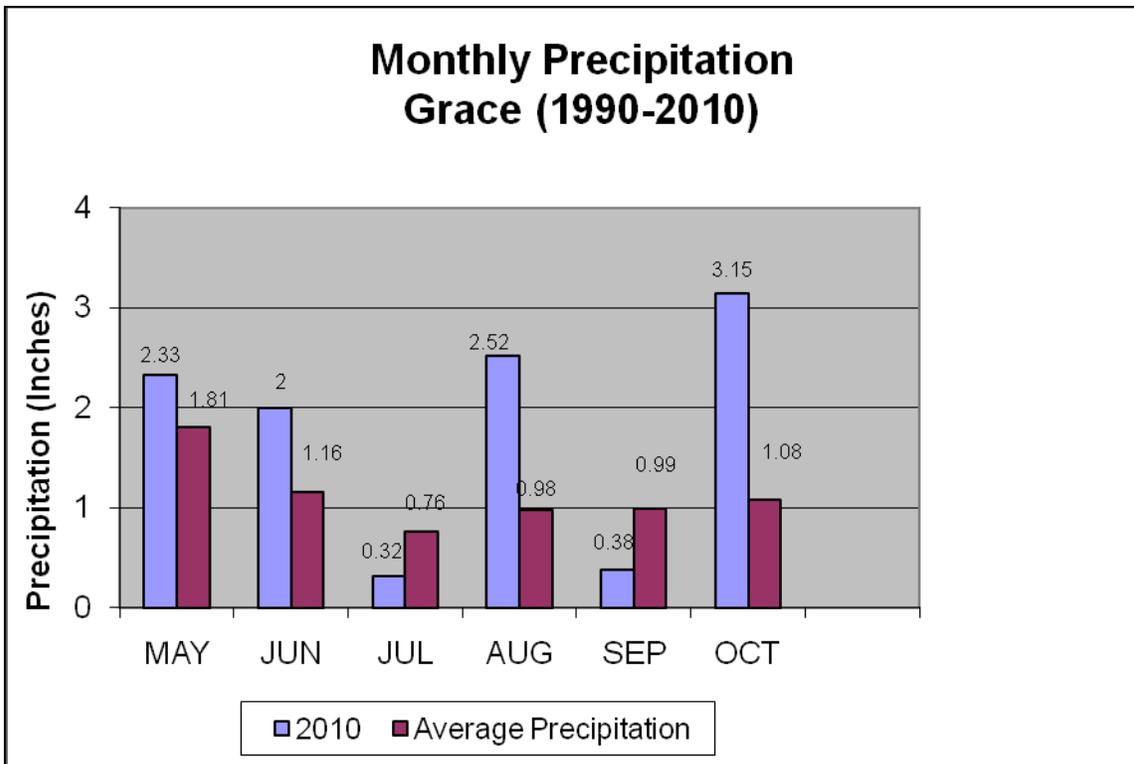


Figure 4.1(h) Observed and average precipitation at Grace RAWS site, Fire Weather Zone 413.

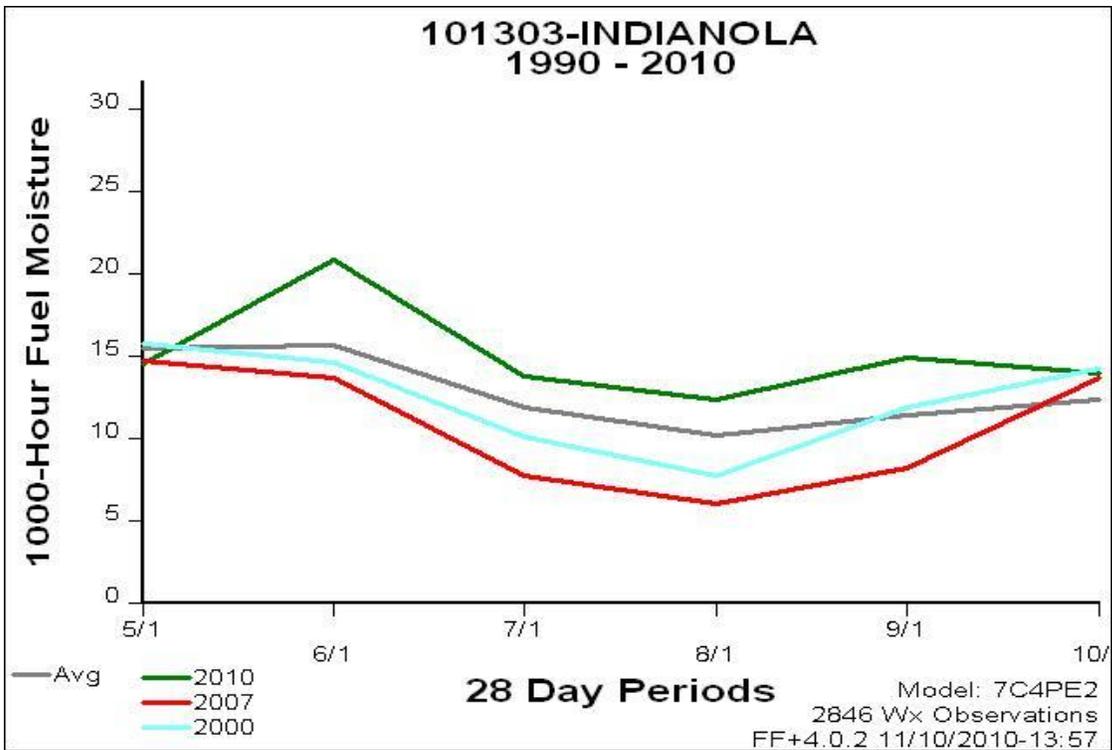


Figure 4.2(a) Observed and average 1000 Hour Fuel Moisture at Indianola RAWS site, Fire Weather Zone 475.

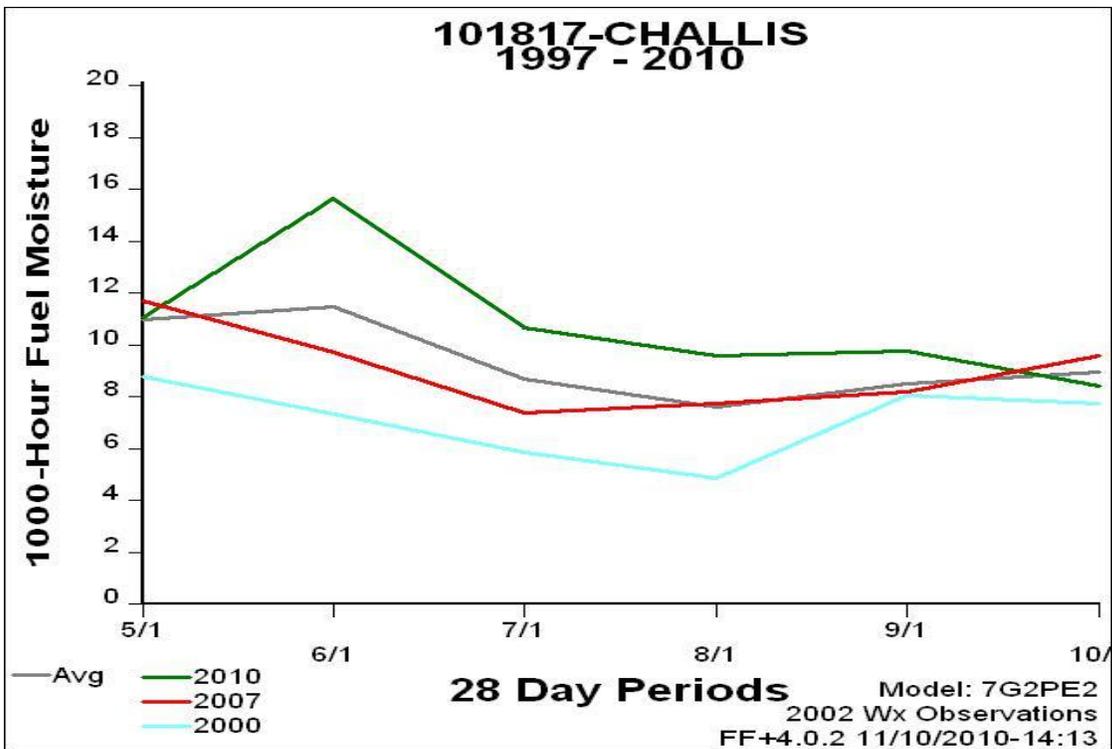


Figure 4.2(b) Observed and average 1000 Fuel Moisture at Challis RAWS site, Fire Weather Zone 476.

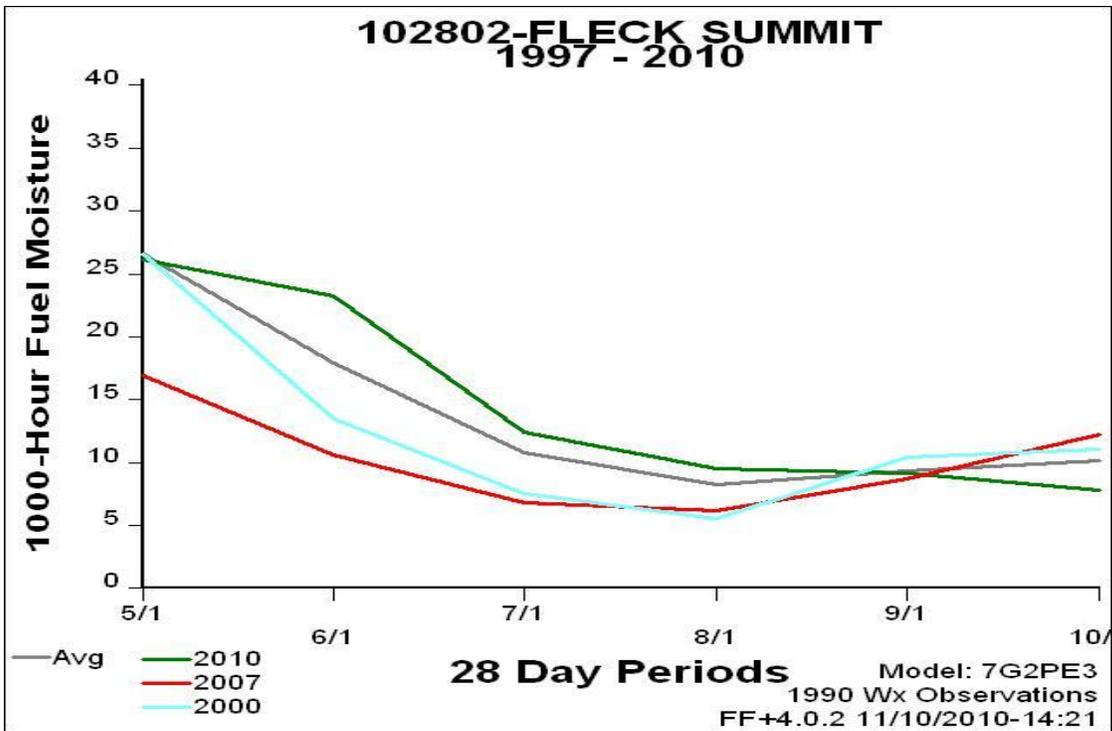


Figure 4.2(c) Observed and average 1000 Fuel Moisture at Fleck Summit RAWS site, Fire Weather Zone 477.

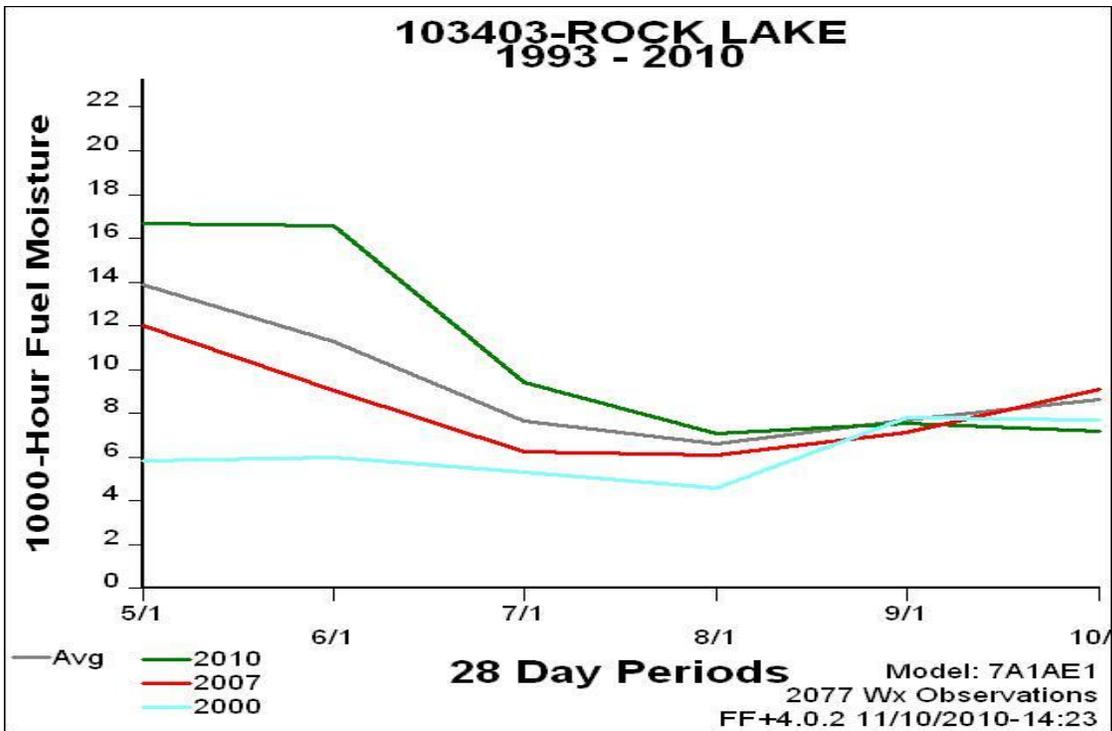


Figure 4.2(d) Observed and average 1000 Hour Fuel Moisture at Rock Lake RAWS site, Fire Weather Zone 409.

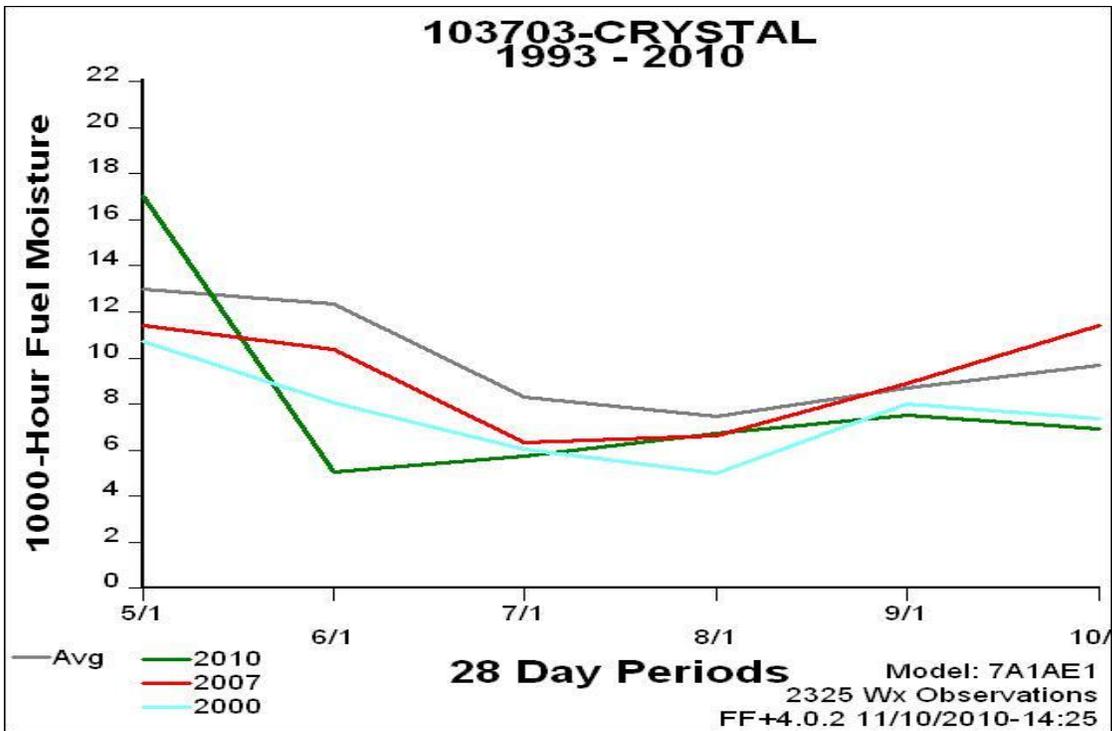


Figure 4.2(e) Observed and average 1000 Hour Fuel Moisture at Crystal RAWS site, Fire Weather Zone 410.

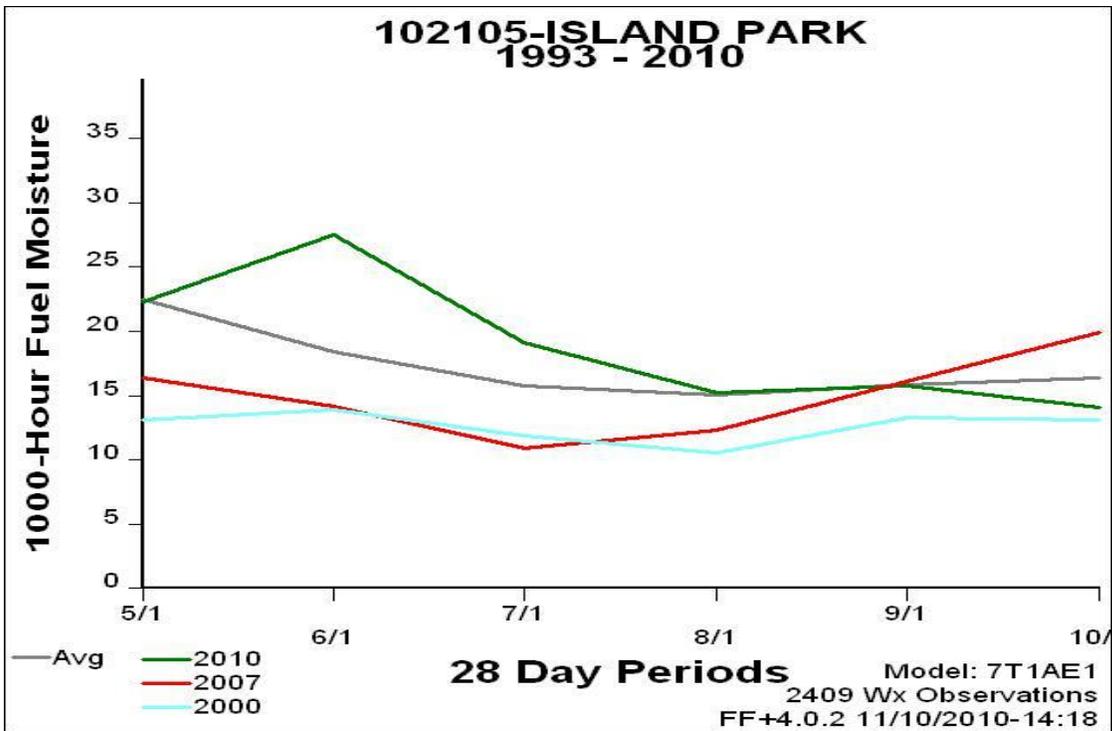


Figure 4.2(f) Observed and average 1000 Hour Fuel Moisture at Island Park RAWS site, Fire Weather Zone 411.

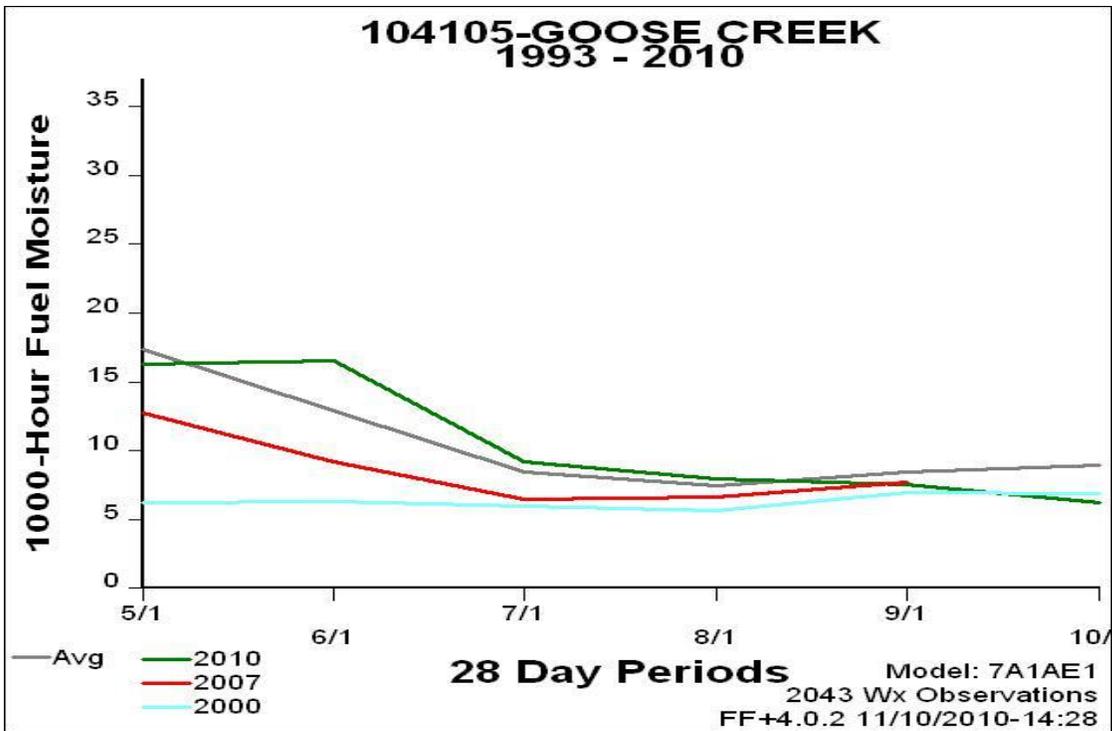


Figure 4.2(g) Observed and average 1000 Hour Fuel Moisture at Goose Creek RAWS site, Fire Weather Zone 412.

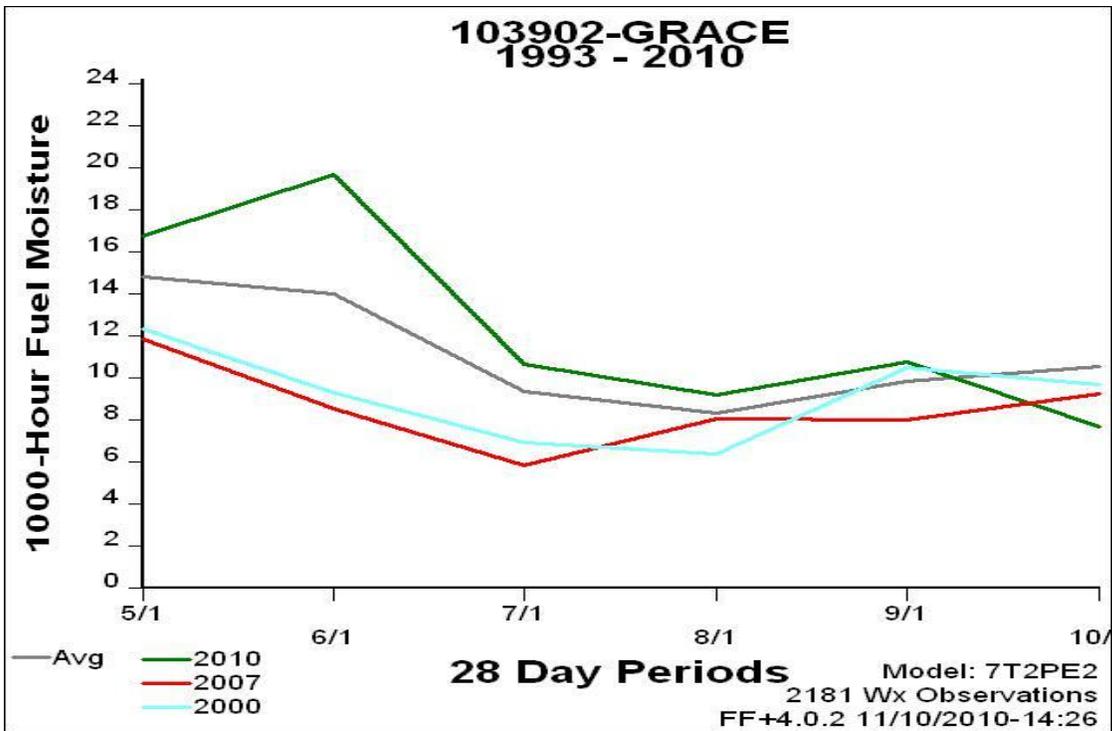


Figure 4.2(h) Observed and average 1000 Hour Fuel Moisture at Grace RAWS site, Fire Weather Zone 413.

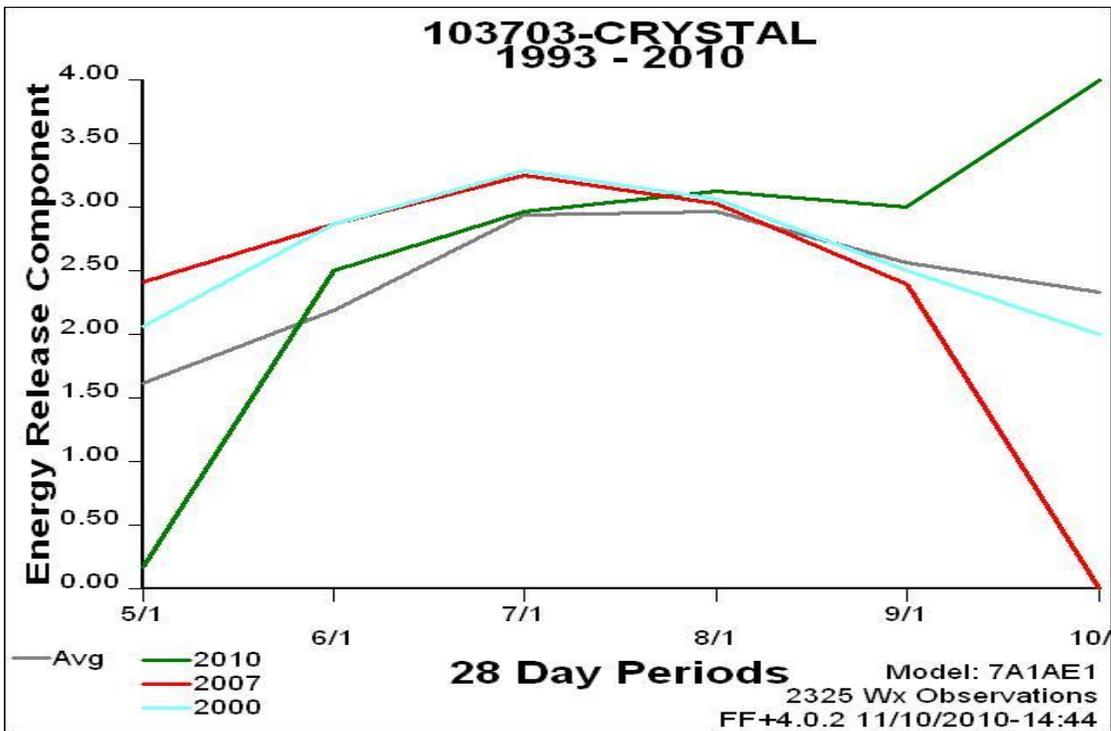


Figure 4.3 Calculated Energy Release Component at Crystal RAWS site, Fire Weather Zone 410.

NOTE: Several RAWS stations were not available for several weeks (late May and June) this fire season and data in some of the above graphics may not be reliable. The RAWS sites at Island Park and Crystal were among those with missing data.

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5. Office Operations:

5.1 Red Flag Verification

1. Formal verification of Red Flag Warnings in Southeast Idaho began with the 2000 fire season and is now a permanent part of the fire weather program. Verification is based on current Red Flag Warning and Fire Weather Watch criteria that has been coordinated with local land management agencies and published in the Great Basin Annual Operating Plan for Fire Weather and Predictive Services. Current criteria for the Pocatello Fire Weather District are shown in paragraph 5.1.2 below.

Events considered “short fused” or having time lengths typically less than six hours (Dry Lightning) were split out from other events occurring over a longer time period, reference tables 5.1 (a-d) below.

2. Conditions that indicate a Red Flag Event:

Fire Weather Watches and Red Flag Warnings, are issued for conditions of very high or extreme fire danger (as determined by land management agencies) and dry fuels, in combination with one of the following:

- a. Widely scattered or greater ($\geq 15\%$ of aerial coverage) thunderstorm activity.
- b. Winds gusts for any three or more hours ≥ 25 mph for Southeast Idaho Mountains, ≥ 30 mph for the Snake River Plain and relative humidity is ≤ 15 percent.
- c. In the judgment of the forecaster, weather conditions will create a critical fire control situation. These conditions may include strong microburst winds, passage of a cold front or a strong wind shift.

Red Flag criteria are developed from a local knowledge of fuel types, terrain, weather conditions common or unusual to the area, historical fire behavior, and judgment of the local land management agencies. Because the criteria for issuing Red Flag products can vary from one district to another, these verification results are not necessarily comparable with other forecast offices.

3. Methodology:

Verification of Red Flag Warnings was conducted on a zone by zone basis. Example: If a warning for strong wind was issued for fire weather zones 409 and 410, but strong winds were observed only in zone 410, then this counts as two warnings, one that verified and one false alarm. Also, if strong winds were observed in zone 412, but no warning was issued, then this would be counted as one missed event.

Sources of verification included Remote Automated Weather Stations (RAWS), Meteorological Reporting Stations (METAR), lightning data; WSR-88D Doppler Weather Radar estimated precipitation, volunteer weather spotter information such as heavy rain events, and reports of observed fire behavior from personnel in the field.

Local MESONET reporting networks maintained by Idaho Department of Transportation and the Idaho National Laboratory were not used as a source of verification for wind events since there are differences in observing standards at these sites.

Statistical parameters were calculated as follows:

Probability of Detection	$POD = a/(a+c)$
Critical Success Index	$CSI = a/(a+b+c)$
False Alarm Rate	$FAR = 1-[a/(a+b)]$

where

- a = the number of correct warnings (verified)
- b = the number of incorrect warnings (not verified)
- c = the number of events not warned

4. Sources of error:

Red Flag criteria for wind events in the Great Basin were modified based on interagency agreement set forth in the Great Basin Fire Weather Operating Plan for 2005 and continue without change for the 2006 and 2007 fire seasons. Beginning with the 2008 fire season, the distinction between wet and dry thunderstorms was eliminated from the Red Flag criteria owing to concerns of lightning strikes and fire ignition occurring outside the main thunderstorm rain shaft. A thunderstorm was previously considered “dry” if it produced little or no precipitation (< 0.10 inch). The mid-point of a forecast range serves as the break point for watch/warning issuance. This effectively adds an element of representativeness to the verification process. Therefore, any inference of trends from verification results must consider changes made to the established criteria for a Red Flag Event and verification procedures in past years. The Red Flag Event criteria and verification procedures also changed in 2002 and 2004. Please reference past issues of this Fire Weather Annual Report.

Forecaster skill level and confidence may be lower for peak wind gusts over sustained wind speed. Downward transport of momentum in the atmosphere, complex terrain, inversions of temperature lapse rate, variations in surface insolation owing to vegetative ground cover, reflectivity, absorption and transmissivity of the atmosphere, and the energy phase change of water in the atmosphere all impact the observed peak surface wind gust. Not all of these processes are sufficiently represented by available computer modeling and operational forecaster techniques.

Personal judgment was required to determine when lightning was more than an isolated event and significant in areal coverage.

Field observations of fire behavior may serve as an important indicator of Red Flag conditions. On rare occasion this may affect the best judgment of the forecaster and land management personnel. On days or in locations where there were no on-going fires this information was not available.

In paragraph 2c above, judgment of the forecaster and land management personnel is permitted to override the strict criteria of relative humidity and wind gusts. The general consensus is there is enough uncertainty in the fire environment (fuel, weather and topography) and this should remain a necessary and important element of the Red Flag criteria. This also requires a certain amount of judgment in the verification process.

Both RAWS and METAR stations report instantaneous wind gusts, but the observing standards for height of the wind sensor can vary.

On rare occasion the fuels were defined as critical at an elevation below that of existing RAWS and METAR stations.

Skill and lead-time vary with the type of event.

5. Decision Criteria

Wind – The number of available RAWS and METAR sites varied both with the area warned and location where fuels were defined as critical. Every attempt was made to judge the representativeness of wind conditions.

Lightning – Archived lightning data was used to determine verification. A good deal of judgment was needed to determine if the observed lightning was more than an isolated event.

Wet versus dry thunderstorms – this element was removed from the Red Flag Criteria beginning with the 2008 fire season. The number of reported fire starts is not a reliable indicator since lightning strikes can occur outside the thunderstorm precipitation shield striking drier fuels and a single thunderstorm can be long lived producing numerous strikes over some distance.

Other – Reports of observed fire behavior from personnel in the field continue to be useful when dealing with long-term drought conditions and days of reported low relative humidity. If sustained fire runs are observed but available observations do not necessarily support warning criteria, the judgment would likely fall on the side of safety of life and property.

6. Results:

Red Flag Warning criteria were met on a total of 17 different days during this fire season in the Pocatello Fire Weather District. Six of these days were the result of low relative humidity and gusty winds; the remaining 11 days resulted from lightning activity. There were 3 days (4 events) when Red Flag Warning criteria were met somewhere in the Pocatello Fire Weather District without a warning in effect.

	May	June	July	August	September	October	Total
Total # watches	0	0	2	13	5	0	20
Total # of warnings	0	0	13	23	9	0	45
Number warnings that were preceded by a watch	0	0	2	12	5	0	19
Warnings verified (a)	0	0	9	19	8	0	36
Warnings not verified (b)	0	0	4	4	1	0	9
Events not warned (c)	0	0	2	2	0	0	4

Table 5.1(a). Combined synoptic (long term) and short fused Red Flag event products issued in the WFO Pocatello Fire Weather District during the 2010 season.

	May	June	July	August	September	October	Total
Total # watches	0	0	0	5	5	0	10
Total # of warnings	0	0	0	11	9	0	20
Number warnings preceded by a watch	0	0	0	4	5	0	9
Warnings verified (a)	0	0	0	10	8	0	18
Warnings not verified (b)	0	0	0	1	1	0	2
Events not warned (c)	0	0	0	1	0	0	1

Table 5.1(b). Synoptic scale Red Flag event products issued in the WFO Pocatello Fire Weather District during the 2010 season. Example cold fronts, low relative humidity, strong pressure gradient related winds.

	May	June	July	August	September	October	Total
Total # of watches	-	0	2	8	0	0	10
Total # of warnings	-	0	13	12	0	0	25
Number warnings preceded by a watch	-	0	2	8	0	0	10
Warnings verified (a)	-	0	9	9	0	0	18
Warnings not verified (b)	-	0	4	3	0	0	7
Events not warned (c)	-	0	2	1	0	0	3

Table 5.1(c). Short fused Red Flag event products issued in the WFO Pocatello Fire Weather District during the 2010 season. Example: lightning events and strong micro burst winds.

Red Flag verification resulted in the following:

	Synoptic Events	Short Fused Events (Lightning)	All Events
Probability of detection POD =	0.95	0.86	0.90
Critical success index CSI =	0.86	0.64	0.73
False alarm rate FAR =	0.10	0.28	0.20
Average lead time for Warnings =	18 hrs. 35 min.	17 hrs. 09 min.	17 hrs. 50 min.

Table 5.1(d). Combined synoptic (long term) and short fused Red Flag event products issued in the WFO Pocatello Fire Weather District during the 2010 season.

7. Implications:

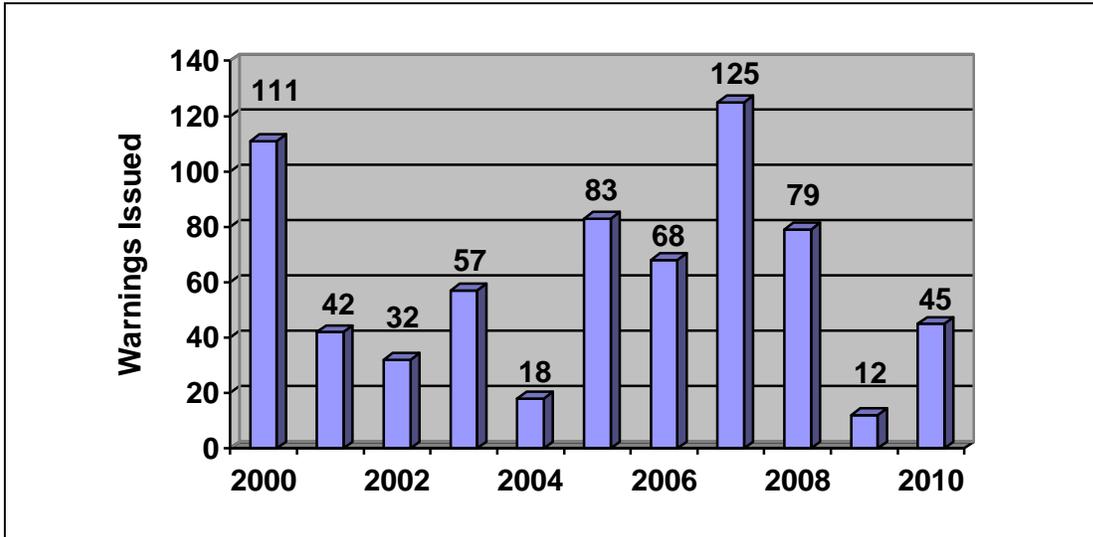


Figure 5.2 Historical Red Flag Warnings in Southeast Idaho; based on one warning per fire weather zone meeting criteria. In dry years the number of zones with “critical” fuels generally increases, and so does the number of warnings. The Red Flag criteria have changed several times since the 2000 fire season.

The 2010 fire season in Southeast Idaho got off to a late start owing to cloud cover, seasonably cool temperatures and above normal rain fall into the first half of July.

Local vegetation entered the “green-up” period later than normal followed by later than normal curing of local fuels. Lightning activity was judged to be significant on 11 days this season, compared to an average of 8 days since 2008 (Figure 2.8) and accounted for 25 of the 45 warnings issued. The Weather Forecast Office in Pocatello achieved a probability of detection of 0.90 but this was off set by a false alarm rate of 0.20 this year, down from .33 in 2009.

5.2 Spot Forecasts prepared by WFO Pocatello:

Wildfires	157	Verbal Phone Briefings	
Prescribed Fires	152	for fire support	48
HAZMAT	0	search & rescue	1
Backup	0	<u>exercise</u>	<u>0</u>
Exercise	0	Total	49
<u>Search & Rescue</u>	<u>1</u>		
Total	310		

**Spot Forecasts for 2010
Total (310)**

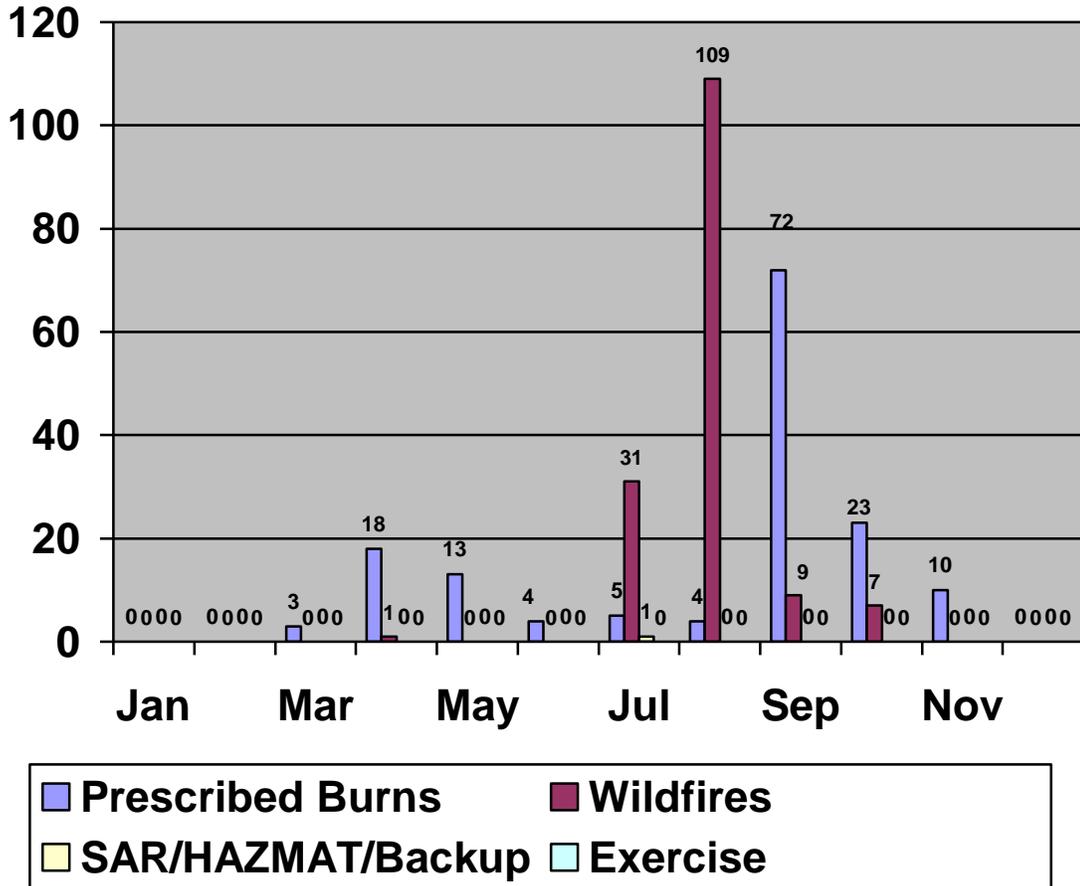


Figure 5.3(a) Spot Forecasts prepared by the Pocatello Fire Weather District during the 2010 fire season.

Spot Requests by Dispatch Center

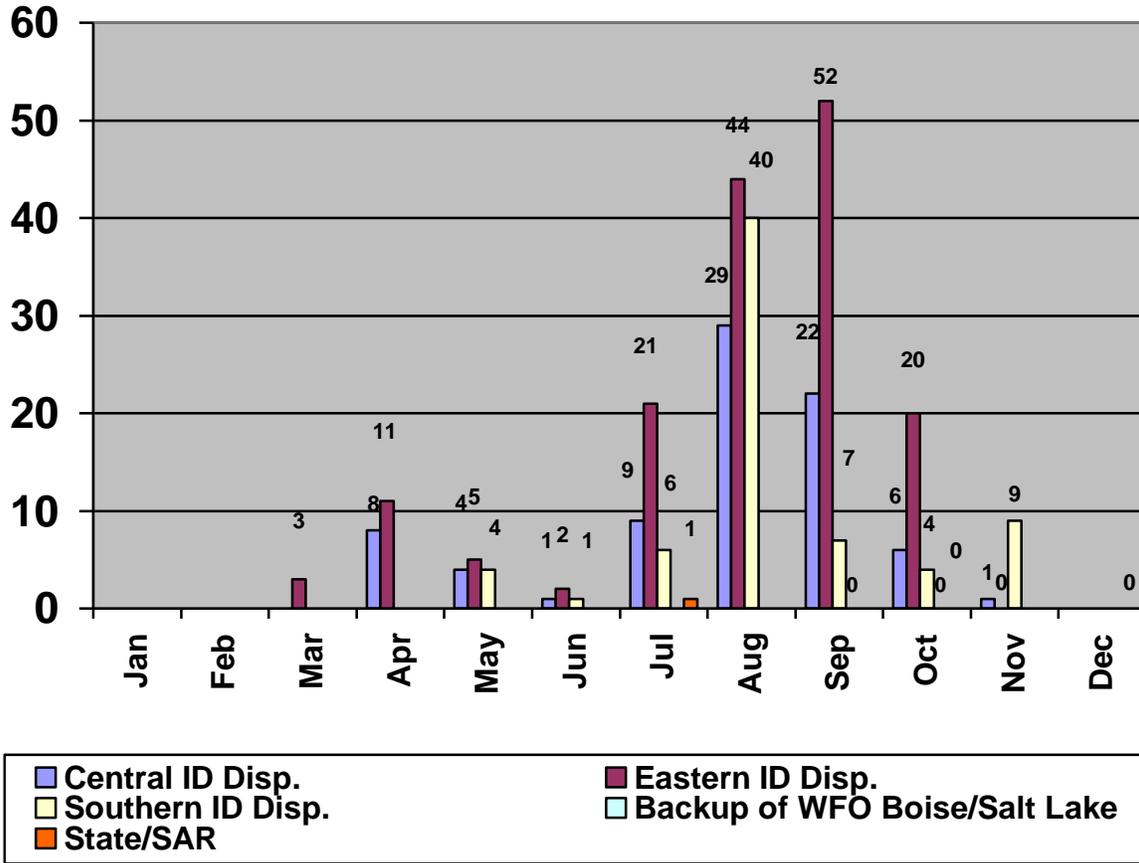


Figure 5.3(b) Spot Forecasts requested by dispatch area during the 2010 fire season in Southeast Idaho.

Historical Spot Forecasts

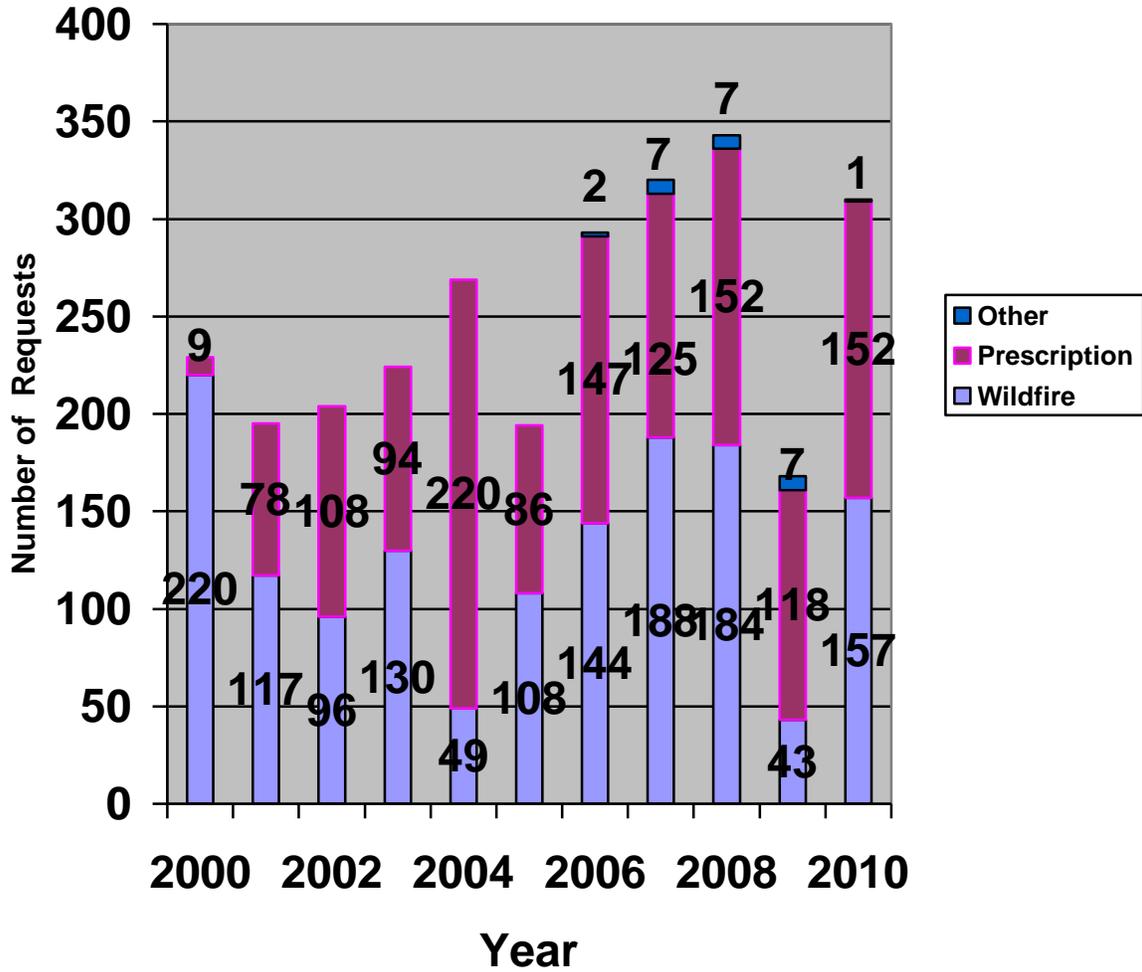


Figure 5.4 Historical trends in Spot Forecast requests for the Pocatello Fire Weather District.

5.3 Fire Dispatches Supported by WFO Pocatello: There were two IMET dispatches this fire season resulting in 18 man days served out of the office..

<i>Date</i>	<i>Dispatch Location</i>	<i>Incident Meteorologist</i>
August 21 to August 28, 2010	White Lightning Complex BIA Near Warm Springs, Oregon	Jack Messick
September 27 to October 06, 2010	Twitchell Canyon Fire Fish Lake NF Near Manderfield, Utah	Bob Survick

Table 5.3 Incident Meteorologist Dispatches by WFO Pocatello

5.4 Training: WFO Pocatello staff participated in the following training courses during the 2010 season.

<u>Forecaster</u>	<u>Training situation</u>
Bob Survick and Jack Messick	National Incident Meteorologist Workshop held March 22 through 26, 2010 in Boise, Idaho.
Bob Survick and Jack Messick	Introduction to CAMEO webinar, November 18, 2009 to March 3, 2010.
(Predictive Services)	Instructor S-290 Intermediate Wildland Fire Behavior, May 24-27, 2010. College of Southern Idaho, Twin Falls, Idaho.
Jack Messick	Instructor S-290 Intermediate Wildland Fire Behavior, May 17-18, 2010 hosted by the Snake River Hot Shots, Pocatello, Idaho.
Jack Messick	Instructor S-290 Intermediate Wildland Fire Behavior, June 2-3, 2010 Eastern Idaho Technical College, Idaho Falls, Idaho.
Bob Survick and Jack Messick	Completed ICS-300 Intermediate Incident Command System, November 3-4, 2010 conducted at the Pocatello Police Department.
Rick Dittmann and Vernon Preston	Completed ICS-400 December 2-3, 2010.

5.5 Field Visits: The staff at WFO Pocatello participated in seven interagency meetings this year.

<u>Location</u>	<u>Dates</u>
Ground Hog Day Chili Cook-off National Weather Service Office including EIIFC Pocatello, Idaho	January 29, 2010
South Central Idaho Interagency Coop/FMO Meeting South Idaho Interagency Fire Center Shoshone, Idaho Bob Survick	February 23, 2010
Central Idaho Interagency Fire Center Pre-season visit by Bob Survick and John Keyes Salmon, Idaho	April 13, 2010
Spring Operations Meeting Eastern Idaho Interagency Fire Center Idaho Falls, Idaho (EGB Predictive Services)	May, 2010
IC Type 4 & 5 Workshop Salmon, Idaho Rick Dittmann	May 18, 2010
IC Type 4 & 5 Workshop Challis, Idaho Rick Dittmann	June 7, 2010
Eastern Great Basin Predictive Services And National Weather Service Post Season Meeting Salt Lake City, Utah Rick Dittmann and Bob Survick	November 3-4, 2010

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